Per Capita Steel Output Gains—Page 1634

THE IRON TRADE REVIEW

Registered U. S. Patent Office

Published Weekly
VOL. LXX. No. 23

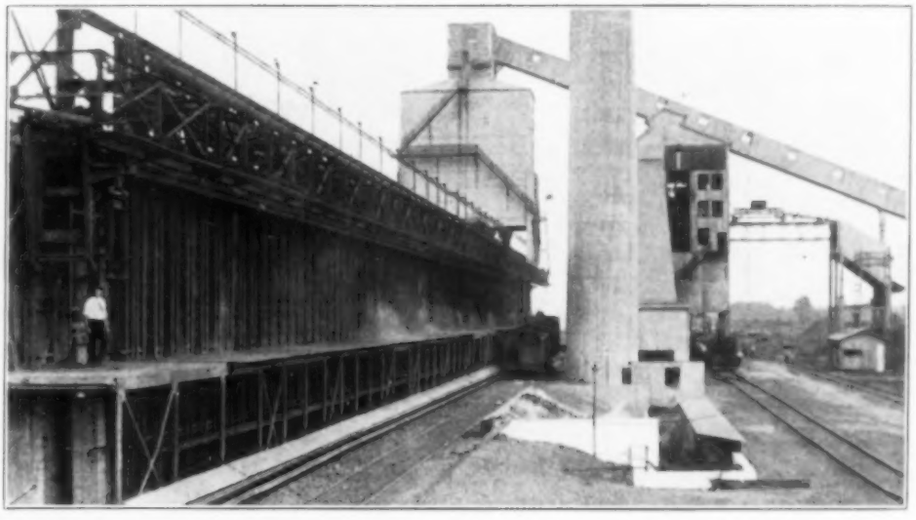
CLEVELAND, JUNE 8, 1922

Entered as second-class matter at the post-office in Cleveland, Ohio, under the act of March 3, 1879

Six Dollars a Year
Single Copy 25 Cents

TONNAGE

Roberts Coke Ovens



Eighty Roberts Coke Ovens at Granite City, Illinois

Capacity Thirty Tons of Coal per Oven Per Day

BIG industries are based on handling big tonnages. In operation, Roberts Coke Ovens have demonstrated that they can handle greater tonnages of coal than have ever been handled in by-product coke ovens before.

These ovens, with thirty tons of coal capacity, are producing twenty-one tons of coke per oven, per day. They are doing this on coals that heretofore were considered non-coking, and are making satisfactory coke for metallurgical purposes. Naturally they do better on coking coals. This is accomplished without any more effort than older plants using a larger number of ovens to produce the same tonnage.

They save all the by-products that are in the coal, and the quality is equal to the quality of by-products recovered in any oven.

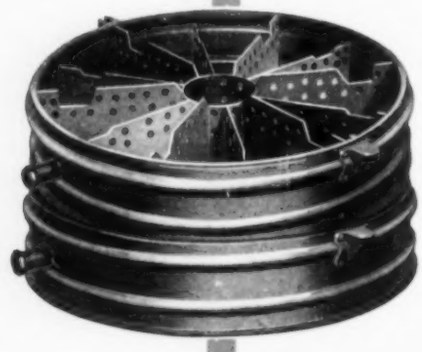
Aside from tonnage, the quality of the coke is demonstrated by the fact that a nineteen thousand cubic foot blast furnace, using coke made in the Roberts ovens, last month produced 15,441 tons of pig iron on 1791 lbs. of coke per ton of iron.

Coke and iron producers will be interested in the story we have to tell them about the by-product coke oven industry.

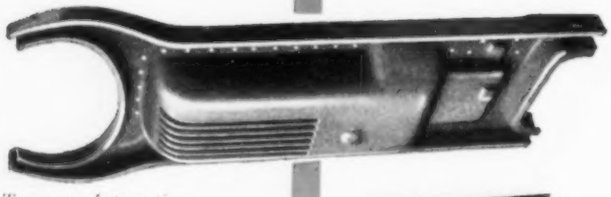
AMERICAN COKE & CHEMICAL COMPANY

208 S. La Salle Street — CHICAGO, ILL.

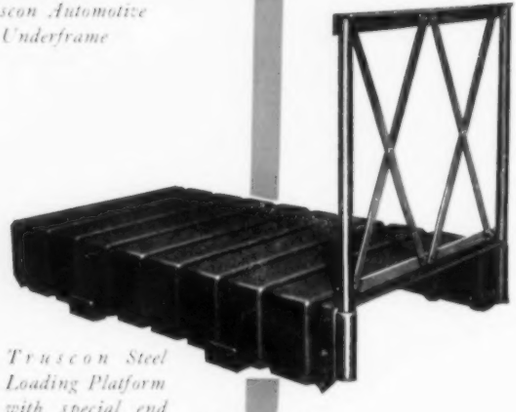
Making Your Good Product Better



Truscon Steel Flask



Truscon Automotive Underframe



Truscon Steel Loading Platform with special end rack

Leadership is rightly the aim of every good manufacturer. It is only attained and held by making his product a little better or a little more economically or a little more satisfactorily in meeting the customer's needs. Eternal vigilance and alertness alone can permanently maintain leadership.

To the manufacturer open-minded enough to investigate and desirous of advancing his product, we can offer in Truscon Pressed Steel Parts exceptional quality and an unusual service. Our men, both in the factory and outside, have had broad experience and will work with you very closely in devising the best designs for your parts.

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Youngstown, Ohio

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Vol. LXX

THE IRON TRADE REVIEW

Registered U. S. Patent Office

No. 23

Cleveland, June 8, 1922

Congestion Growing, Prices Rise

Steel Deliveries of Minimum Sellers More in Arrears—Ore Rate Tangle Only Partially Cleared and Season's Prices Still Awaited—May Pig Iron Output Shows Substantial Gain—Fuel Stringency More Apparent

WITH the receipt of new tonnage still in excess of shipments as miscellaneous business is expanding, and production under restraint because of the coal strike, a situation of growing congestion in steel continues to develop. The underlying conditions are reflected in a stronger upward tendency of prices. While certain of the larger producers including the Steel corporation are holding to minimum quotations, their deliveries are steadily extending and a growing portion of the going business of the market is being taken on a higher basis.

Action of the American Sheet & Tin Plate Co. in extending prevailing sheet prices only to Aug. 1 and not for the entire third quarter is significant. Some of the independent mills are quoting $5 in advance of this schedule. Another large independent interest this week advanced plates, shapes and bars $2 to $8 above the minimum basis.

Sharp Gain in Output

May production of pig iron again went forward sharply, emphasizing the small effect of the coal strike on operations during that period. The gross increase over April was 239,187 tons, making the total 2,309,348 tons. This is the largest monthly output since January, 1921, and it represents an increase of 167 per cent over the low point of activity last July. Average daily production in May was 74,495 tons compared with 69,005 tons in April. The number of furnaces in blast on the last day of the month was increased to 175, a net gain of 14 over the corresponding date in April.

The June outlook for continuing increases of iron production is less promising as the cumulative effects of the dragged out coal strike more clearly are beginning to be felt. In the East at least, two furnaces which were scheduled to blow in soon are being held up on account of the coke shortage. An eastern steelworks has been prevented from putting on additional open hearths because of inability to get coal. Shortage of bessemer steel restrains sales of pipe.

Small changes continue in THE IRON TRADE REVIEW composite of 14 iron and steel products. The average this week is $36.72 compared with $36.64 last week, $36.62 two weeks ago, $36.60 three weeks ago and $32.80 the recent low mark.

Battle Over Ore Rates

After a week of maneuvering and conference between the shippers and the railroads, the season's lake ore prices still remain unsettled but may be announced this week. The railroad executives finally have refused to make a voluntary reduction of the upper lake rates which the ore operators have sought preliminary to determining the extent to which the season's ore prices could be lowered. A clarifying action in this matter is the order of the interstate commerce commission granting the railroads permission to put in effect within five days the 10 per cent reduction on lower lake freights and not wait until July 1, the general date of application. It is believed this means the new rate will be put in force about June 15. The furnaces have notified the ore companies to begin shipments immediately the cut is effective.

Structural steel awards are keeping up in fair volume though they are not up to the April or early May level. New contracts this week total 24,000 tons.

Pig iron buying is on a much smaller scale all around. Some buyers manifestly are holding off because of the possible effect of lower freight rates, expected lower ore prices, etc. Generally, however, requirements seem to have been well covered by the recent buying.

Car Orders Keep Up

Cars awarded in May numbered 18,240 as compared with 31,490 in April but were larger than any of the first three months of the year. The total for the first five months is 87,225, or more than three times that of all 1921. Awards of the week were 2500 while fresh inquiries have appeared for 4000 new cars and 3000 repairs, requiring about 42,000 tons of steel.

The principal item in the export market is the purchase of 56,000 boxes of tin plate by the Nippon Oil Co. of Japan which was equally divided between the Steel corporation and the Weirton Steel Co. This order was taken against a lower Welsh quotation.

Business Trend and Chart Section Page 1639

THE IRON TRADE REVIEW

Registered U. S. Patent Office

Devoted to the Iron, Steel, Foundry and Metalworking Industries

Published Every Thursday by
THE PENTON PUBLISHING CO., CLEVELAND
Member, Audit Bureau of Circulations and Associated Business Papers, Inc.

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Cable Address, IROTRAPEN, London

Subscription, United States, Cuba and Mexico, $6 per year.
Canada and other Foreign Countries, $8.50 per year.
Entered at the Postoffice at Cleveland as Second Class Matter

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Economics Valuable to Foremen

STANDARDS of efficiency for foremen are being raised to the point where a knowledge of economics is considered fully as important as an understanding of the mechanical features of their work. The theory of foremanship training is being put into practice, and is standing the test, in an ever increasing number of industrial establishments.

Evidence of this is found in a report of the National Industrial Conference board recently issued giving the results of the board's survey of the operation of works councils in 800 plants. All those companies which have made special effort to train foremen in economics, as a part of their system of employe representation, give enthusiastic endorsement to the plan. Those companies which have kept their employs well informed of economic changes affecting their business have encountered little opposition in making the readjustment required as a consequence.

The establishments have learned that employe representation, to be successful, must be founded on the proper kind of employer representation, and that the right way to obtain this is through intelligent, broad-gaged foremanship. Leadership must be reinforced with an understanding of business fundamentals.

The greatest task management has to perform is to bring foremen to realize the possibilities for improvement. Foremanship training, in which instruction in economics is an essential part, is being undertaken in a majority of the largest industries, and the co-operative relationship between employers and employes made much stronger as a result. These "keymen" are being given a sense of greater responsibility; this is broadening the opportunities for those who can grasp the facts; who can get the viewpoint of their employers, and who can interpret and transmit the facts and viewpoint to their men. The importance of this can be stressed to the extent of saying the quality of intelligent leadership is paramount to the foreman's ability as a mechanic, or as an instructor in mechanics. The foreman's purpose is the purpose of management, and as it is management's purpose that men be given an understanding of the conditions which affect the company, the greater the foreman's knowledge of economics the better he is equipped to fulfill the aims of management.

Through the study and interpretation of charts showing business changes and production trends, industrial engineers agree, foremen have the best means at hand for obtaining basic information. A course on economics for foremen appearing periodically in THE IRON TRADE REVIEW explains how plant data and charts may be used to good advantage in connection with those of a general character.

Training of foremen should not be inspirational; it should be based on facts, to be construed in a rational way, unswerved by personal feeling. Foremen brought face to face with facts, and instructed in revealing the significance of these to their men cannot fail to appreciate how vital this knowledge is in maintaing the right sort of contact between management and workmen.

Blast Furnace Is Scrap Consumer

CONSIDERATIONS of cost and production regulate the use of scrap in blast furnaces in mixture with iron ore. The influencing factor is the spread between the cost of one ton of scrap and two tons of ore. Because of this fact it is difficult to determine accurately just how much the use of scrap is growing in the manufacture of pig iron. When scrap prices are low the tonnage charged into blast furnaces increases and as the price rises, its use declines.

However, in spite of the irregularity of the practice, it seems undeniable that the general trend is

toward a larger use of iron and steel scrap for the production of pig iron. This is especially true in the East. While western furnaces have lagged in this respect, they, also, are utilizing more scrap in this way than formerly.

Borings and turning are most in demand for this purpose as they distribute well with the burden and melt readily, because of their relatively small size. Annealing pots, broken under the hammer, also are utilized in this way. Shoveling steel and other grades which consist of small pieces are charged from time to time when prices of the material are right.

Practice in this respect varies and while eastern furnaces have attained satisfactory results, some experimenters in the West have concluded that results are not sufficiently economical to warrant the adoption of the practice freely. The advantages claimed from the use of scrap are that a larger tonnage of iron is obtained inasmuch as the scrap needs only to be melted and no metallurgical process is necessary as in the case of the ore; that the scrap returns practically a ton of iron per ton while two tons of ore are needed for a ton of metal; that less coke and limestone are needed because the reducing action is absent. In fact, the blast furnace stack becomes in effect a cupola, simply melting the scrap.

At the present moment a much larger tonnage of scrap is being utilized by blast furnaces than formerly. This is because scrap prices have been low and ore is high. Freight rates on ore add much to its cost. Scrap suitable for blast furnace melting frequently is available close to the point of consumption and thus the freight is not a material factor. With scrap prices stiffening, as they have been recently, it seems probable less of this material will be called for.

An underlying factor that probably will cause a constantly growing demand for scrap is a desire to conserve ore resources and to utilize grades of old material for which other economical use has not been found. This applies particularly to borings and turnings. These grades do not respond readily to melting in the cupola though some methods have been used to utilize them successfully in foundry practice.

New Correspondent

Takes Charge of THE IRON TRADE REVIEW, Paris Office Covering France and Belgium

VINCENT Delport has been appointed French correspondent of THE IRON TRADE REVIEW on account of the resignation of F. M. Mansfield. Mr. Delport also has charge of the Paris office of the Penton Publishing Co. at 224 Rue de Rivoli, where he will represent the other Penton publications including *Daily Metal Trade, Foundry, Abrasive Industry, Marine Review* and *Power Boating*. After being educated as a mechanical engineer at one of the leading French technical schools, Mr. Delport, who is partly of English extraction, entered the iron and steel business. With the outbreak of the war he joined the French army in which he saw active service as a captain of artillery for several years. Later in the war on account of his technical training and knowledge of English he was attached to the French military mission in the United States with which he served until the end of the war traveling extensive throughout the country.

At the end of the war he returned to France and later again went back to the United States to join the sales force of the United States Steel Products Co. in New York. After a period in this company's headquarters, Mr. Delport was transferred to the Paris office of the Steel Products company, where he remained until the spring of 1921, when he resigned to form a partnership with H. E. Mathe under the name of Le Bureau Industriel Franco-Anglais, an engineering and contracting firm in which he still is interested.

Keep Government Out of Business

ORGANIZED labor, through the medium of the International Association of Machinists, is making a final effort to persuade congress and the administration to maintain arsenals and navy yards, whose closing because of the naval holiday was to save millions. It wants the government to allow these plants to compete in the furnishing of equipment to all branches of the federal government.

The principle is wrong, to start with; nowhere should the government compete with private enterprise. In the second instance, the lack of overhead and the difficulty of segregating costs would make impossible any fair comparison of private and arsenal-navy yard prices. Nor should the source of the proposal be overlooked; the machinists' union has thousands of members now in the government service who will be obliged to look elsewhere for work should navy yard and arsenal activities be reduced.

The machinists detract immeasurably from their case when they foresee opposition from "leeches who want no interference with their opportunity to suck juicy profits from government extravagance," charge "outrageous profiteering by private industry in selling supplies to the government", and term government contractors "militarists and jingoists". So long as naval armaments are to be limited, the sooner the yards and arsenals are closed and the federal payroll shortened the better for the public.

Composite Market Average

Representing the Combined Average Prices per Ton of Fourteen Leading Iron and Steel Products, Yesterday, One Week, One Month, Three Months, One Year and Nine Years Ago

June 7, 1922	May 31, 1922	May, 1922	March, 1922	June, 1921	June, 1913
$36.72	$36.64	$36.49	$32.97	$41.87	$26.78

Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

Composite Market Record by Months for Nine Years on Page 1682

SCRAP PRICES, PAGE 1684, WAREHOUSE, ORE, NUTS, BOLTS AND RIVETS AND PIPE PRICES, PAGE 1680

Iron and Steel Prices

Pig Iron

Bessemer, valley	$25.00
Bessemer, Pittsburgh	26.96
Basic, valley	25.00
Basic, Pittsburgh	26.96
Basic, Buffalo	23.00 to 23.50
Basic del., eastern Pa.	25.00 to 26.00
Malleable, valley	24.00 to 25.00
Malleable, Pittsburgh	25.96 to 26.96
Malleable, Chicago	23.00
Malleable, Buffalo, furnace	22.50 to 23.50
Malleable, del., eastern Pa.	25.50 to 26.50

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X East'n and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 to 3.25
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del. Phila.	27.32 to 27.96
No. 1X, Buffalo	23.00 to 24.00
No. 2 foundry, valley	24.00 to 25.00
No. 2 foundry, Pittsburgh	25.96 to 26.96
No. 2 foundry, Buffalo	22.00 to 23.00
No. 2 foundry, Chicago	23.00
No. 2 foundry, Granite City	24.50
No. 2 foundry, Ironton furnace	23.00 to 24.00
No. 2 foundry, Cleveland del.	24.50
No. 2 foundry, del., Phila.	25.84 to 26.32
No. 2 foundry, N. J. tidewater	25.76 to 26.82
No. 2X, eatesrn del. Phila.	26.82 to 27.26
No. 2X, east. N. J. tidewater	26.26 to 27.82
No. 2X, eastren del. Boston	29.06 to 30.06
No. 2X, foundry, Buffalo fur.	22.50 to 23.50
No. 2X, Buffalo del. Boston	28.46 to 29.46
No. 2 southern, Birmingham	18.50 to 19.00
No. 2 southern, Cincinnati	23.00 to 23.50
No. 2 southern, Chicago	25.16 to 25.66
No. 2 southern, Philadelphia	27.16 to 27.66
No. 2 southern, Cleveland	25.16 to 25.66
No. 2 southern, Boston	29.16 to 29.66
No. 2 southern, St. Louis	24.22 to 24.72
No. 2X, Virginia furnace	23.50
No. 2X, Virginia Phila.	29.24
No. 2X, Virginia Jersey City	29.66
No. 2X, Virginia Boston	30.08
Gray forge, eastern Pa.	25.00 to 26.00
Gray forge, val. del. Pitts.	25.96
Low phos., standard, valley	33.00 to 34.00
Low phos., standard, Phila.	35.35
Low phos., Lebanon furnace	30.00
Charcoal, Birmingham	28.00 to 30.00
Charcoal, Superior, Chicago	29.00

Silvery Iron
8 per cent base

Jackson county, O., furnace	32.50
Tennessee, Chicago delivery	Nominal
Ohio brands, Chicago	37.82

Bessemer Ferrosilicon
Jackson County, Ohio, furnace

10 per cent	41.50
11 per cent	44.80
12 per cent	48.10
13 per cent	52.10
14 per cent	57.10

Ferroalloys

Ferromanganese, delivered, Pittsburgh	$72.82 to 75.32
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	70.00
Ferromanganese, 80 per cent, German, c.i.f. Atlantic port	66.00
Spiegel, 19 to 21 per cent furnace spot nominal	35.00 to 36.00
Ferrosilicon, 50 per cent, contract freight allowed	60.00 to 62.50
Ferrotungsten, standard, per pound contained	40.00c to 45.00c
Ferrochrome, 60 to 70 chromium, 4 to 6 carbon, per pound contained, makers plant	11.50c to 12.00c
Imported ferrochrome, 4 to 6 per cent carbon	11.00c to 11.25c
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	$3.50 to $3.75
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Coke

Beehive, Ovens

Connellsville furnace	$6.25 to 7.00
Connellsville foundry	7.00 to 7.75
Pocahontas furnace	5.00 to 6.00
Pocahontas foundry	6.00 to 7.00
New River furnace	6.50 to 7.50
New River foundry	7.50 to 8.00
Wise county furnace	5.00 to 5.50
Wise county foundry	6.00 to 6.50
Alabama furnace	4.50 to 5.00
Alabama foundry	5.50 to 6.00
Alabama pitch coke	8.50 to 10.00

By-Product

Foundry, Newark, N. J., del.	$9.84 to 10.74
Foundry, Chicago, ovens	11.25
Foundry, Boston, delivered	10.15
Foundry, Granite City, Ill., ovens	9.00

Semifinished Material

BILLETS AND BLOOMS
(4 x 4-inch)

Open-hearth, Pittsburgh	$35.00
Open-hearth, Youngstown	35.00
Open-hearth Philadelphia	39.24 to 40.74
Bessemer, Pittsburgh	35.00
Bessemer, Youngstown	35.00
Forging, Pittsburgh	38.00 to 40.00
Forging, Philadelphia	44.24 to 45.74

SHEET BARS

Open-hearth, Pittsburgh	$35.00
Open-hearth, Youngstown	35.00
Bessemer, Pittsburgh	35.00
Bessemer, Youngstown	35.00

SLABS

Pittsburgh and Youngstown	$34.00 to 35.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$38.00 to 40.00
Grooved skelp, Pittsburgh	1.60c to 1.75c
Universal skelp, Pittsburgh	1.60c to 1.75c
Sheared skelp, Pittsburgh	1.60c to 1.75c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	1.60c to 1.75c
Structural shapes, Phila.	1.96c to 2.06c
Structural shapes, New York	1.98c to 2.08c
Structural shapes, Chicago	1.75c to 1.85c
Tank plates, Pittsburgh	1.60c to 1.75c
Tank plates, Philadelphia	1.96c to 2.06c
Tank plates, New York	1.98c to 2.08c
Tank plates, Chicago	1.75c to 1.85c
Bars, soft steel, Pittsburgh	1.60c to 1.75c
Bars, soft steel, Philadelphia	1.96c to 2.06c
Bars, soft steel, New York	1.98c to 2.08c
Bars, soft steel, Chicago	1.75c to 1.85c
Bars, hard steel, Chicago	1.65c
Reinforcing bars, Pittsburgh	1.60c to 1.75c
Bar iron, common, Phila.	1.96c to 2.06c
Bar iron, common, New York	1.98c to 2.08c
Bar iron, common, Chicago	1.70c to 1.75c

Hoops, Bands, Shafting

Hoops, Pittsburgh	2.40c to 2.60c
Bands, Pittsburgh	2.40c to 2.60c
Cold finished steel bars, Pittsburgh base	2.00c to 2.25c

Rails, Track Material

Standard bessemer rails, mill	$40.00
Standard open hearth rails, mill	40.00
Relaying rails, St. Louis	23.00 to 28.00
Relaying rails, Pittsburgh	24.00 to 27.00
Light rails, 25 to 45, mill	1.50c to 1.60c
Angle bars, Chicago base	2.40c
Spikes, railroad, Pittsburgh	2.25c
Spikes, small and boat	2.50c
Spikes, railroad, Chicago	2.88c
Track bolts, Pittsburgh	3.00c to 3.50c
Track bolts, Chicago	3.88c
Tie plates, Pittsburgh	1.75c to 1.90c
Tie plates, Chicago	1.85c to 2.00c

Wire Products

100 lbs. to Jobbers in Carloads

Wire nails, Pittsburgh	2.40c to 2.50c
Plain wire, Pittsburgh	2.25c
Galvanized wire, Pittsburgh	2.75c
Barbed wire, painted, Pitts.	2.50c to 2.65c
Barbed wire, galv., Pittsburgh	3.05c to 3.15c
Polished staples, Pittsburgh	2.55c to 2.65c
Galvanized staples, Pittsburgh	3.05c to 3.15c
C't'd nails, per count keg, Pitts.	1.90c to 2.00c

Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	5.50c
Sheet piling base, Pittsburgh	1.65c to 1.80c
Hot rolled strip steel, Pittsburgh stamping quality	2.40c to 2.60c
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base	4.00c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pittsburgh	3.15c to 3.50c
No. 28, bessemer, Pittsburgh	3.15c to 3.50c
No. 28, open-hearth, Phil.	3.51c to 3.66c
No. 28, open-hearth, Chicago	3.53c to 3.68c

TIN MILL BLACK

No. 28, open-hearth, Pittsburgh	3.15c
No. 28, open-hearth, Chicago	3.38c

GALVANIZED

No. 28, open-hearth, Pittsburgh	4.15c to 4.50c
No. 28, bessemer, Pittsburgh	4.15c to 4.50c
No. 28, open-hearth, Phila.	4.51c to 4.66c
No. 28, open-hearth, Chicago	4.53c to 4.68c

BLUE ANNEALED

No. 10, open-hearth, Pittsburgh	2.40c to 2.75c
No. 19, bessemer, Pittsburgh	2.40c to 2.75c
No. 10, open-hearth, Phila.	2.76c to 3.01c
No. 10, open-hearth, Chicago	2.78c to 2.88c

Tin Plate

Per 100 lb. box.

Tin plate, coke base, Pitts.	$4.75

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers in Carloads

	Black	Galv.
1 to 3-inch, butt steel	71	58½
1 to 1½-inch, butt iron	44½	29½

Boiler Tubes

Carload Discount 4 Points Larger

Steel, 3¼ to 13 inches, l. c. l.	53 off
Charcoal iron, 3½ to 4½ inches, l. c. l.	28 off
Seamless, 3¼ to 5-inch, l. c. l.	43 off

Cast Iron Water Pipe

Class B Pipe

Four-inch, Chicago	$50.60
Six-inch and over, Chicago	46.60
Four-inch, New York	51.80
Six-inch and over, New York	48.80 to 49.80
Four-inch, Birmingham	41.50 to 42.00
Six-inch and over, Birmingham	37.00 to 37.50
Three-inch, Birmingham	50.50 to 51.00

Class A pipe is $4 higher than Class B.
Standard fittings, Birmingham, base, $100.00
6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $20; 3-inch, plus $20; gas pipe fittings, $5 higher.

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

	June 7, 1922	May 1922	March 1922	June 1921
PIG IRON				
Bessemer, valley, del., Pittsburgh.	$26.96	$26.46	$21.21	$25.06
Basic, valley, del., Pittsburgh....	26.96	26.46	19.86	23.16
No. 2 foundry, del., Pittsburgh..	25.96	25.71	20.96	24.26
No. 2 foundry, Chicago.....	23.00	22.60	20.00	21.10
Lake Superior charcoal, Chicago.	29.00	28.40	26.90	38.30
Malleable valley	24.00	24.50	19.00	22.60
Malleable, Chicago	23.00	22.60	20.00	21.30
*Southern No. 2, Birmingham....	18.50	17.60	15.25	21.70
*Southern Ohio, No. 2 Ironton..	23.00	22.70	19.00	22.80
Basic eastern del., eastern Pa.....	25.00	24.55	19.90	24.70
**No. 2X, Virginia furnace.....	24.00	23.50	22.50	26.00
**No. 2X, eastern del. Phila....	26.80	25.60	21.24	26.00
Gray forge val. del., Pittsburgh..	25.96	23.50	20.96	23.16
Ferromanganese, del., Pittsburgh.	72.82	72.32	67.82	76.50
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pittsburgh.	35.00	35.00	29.40	37.40
Sheet bars, open-hearth, Pittsburgh	35.00	35.00	29.40	37.40
Billets, bessemer, Pittsburgh....	35.00	34.50	28.30	37.00
Billets, open-hearth, Pittsburgh...	35.00	34.50	28.30	37.00
FINISHED MATERIAL—				
Steel bars, Pittsburgh	1.60	1.60	1.45	2.05
Steel bars, Chicago.....	1.75	1.65	1.56	2.44
Steel bars, Philadelphia	2.01	1.96	1.76	2.35

*1.75 to 2.25 silicon

	June 7, 1922	May 1922	March 1922	June 1921
FINISHED MATERIAL Continued				
Iron bars, Philadelphia.....	$1.96	$1.96	$1.76	$2.25
Iron bars, Chicago mill.....	1.70	1.67	1.58	2.22
Beams, Pittsburgh	1.60	1.60	1.45	2.05
Beams, Philadelphia	2.01	1.96	1.76	2.40
Beams, Chicago	1.75	1.65	1.58	2.44
Tank plates, Pittsburgh	1.60	1.60	1.45	2.00
Tank plates, Chicago.....	1.75c	1.65	1.58	2.58
Tank plates, Philadelphia	2.01	1.96	1.76	2.35
Sheets, blk., No. 28, Pittsburgh..	3.15	3.15	3.00	3.90
Sheets, blue anl., No. 10, Pitts.	2.40	2.40	2.25	3.00
Sheets, galv., No. 28, Pittsburgh..	4.15	4.15	4.00	4.90
Wire nails, P'ttsburgh.....	2.40	2.40	2.40	3.00
COKE—				
Connellsville furnace, ovens.....	6.25	6.00	3.25	3.15
Connellsville foundry, ovens.....	7.00	6.50	4.05	4.50
OLD MATERIAL—				
Heavy melting steel, Pittsburgh..	17.50	17.00	14.95	13.10
Heavy melting steel, eastern Pa..	15.50	15.15	13.15	11.85
Heavy melting steel, Chicago....	14.50	14.65	12.05	11.20
No. 1 wrought, eastern Pa.....	17.25	17.00	15.60	15.50
No. 1 wrought, Chicago.....	13.75	14.35	12.65	10.80
Rerolling rails, Chicago.....	15.50	15.50	12.85	12.80

**2.25 to 2.75 silicon

Volume of Pig Iron Sales Shrinks

Greater Quietness Is Shown in All Districts—Some Buyers Hold Off Awaiting Effects of Lower Freights and Ore—Chicago Inquiry Revives—Few Eastern Sellers in Market—Southern Iron Gains Strength

New York, June 6.—Buying of pig iron in the metropolitan district has quieted down, total sales of the past week not exceeding 5000 tons. A soil pipe interest bought 2000 tons for three plants, a Brooklyn foundry 1100 tons and a New Jersey melter 800 tons. Some smaller lots were placed. The largest current inquiry is from a locomotive builder which is inquiring for 3600 tons for two plants. Otherwise current inquiries are small. Little solicitation of business is being done as only two makers are in the market and because the others are well sold up. Even these two interests have good sized orders booked. The price situation is strong as several furnaces are prevented from blowing in because of coke shortage. One Buffalo maker has advanced to $25 base 50 cents silicon differentials. It is now difficult to buy Buffalo iron at last week's price of $23 base, while the former minimum figure of $23 base has disappeared on eastern Pennsylvania and New Jersey foundry iron. The current range is from $25.40 to $26 furnace. Most of the business is being done at $24.50 and $25 and the $26 price applies on scattered small tonnages. Several carloads of Alabama foundry iron were sold in this district at $18.50 Birmingham. Several carloads of Virginia No. 2X were sold at $24 furnace. The Cranberry, Tenn., furnace is being repaired and is expected to blow in on copper low phosphorus late in August or September.

Chicago Inquiry Heavier

Chicago, June 6.—Inquiry for pig iron in this district is strengthening after the lull that followed the heavy buying during April and May. Recent sales have been few and of moderate tonnages but new inquiry now is heavier and in larger lots. Malleable plants are increasing their melt but all foundries are experiencing a shortage of labor which is limiting their output. The demand from the Northwest is increasing and this is the last district to show recovery. The Zenith furnace at Duluth will go into blast as soon as possible, probably in 10 days. Quotations are strong at $23 Chicago for all grades, with double silicon differentials asked. A Chicago machinery builder is in the market for 1500 tons of malleable and 500 tons of foundry for an Indiana plant. A southern Wisconsin melter asks 600 tons of foundry and an Illinois stove maker for 150 tons of foundry. Most sellers of southern iron now are asking $18.50 Birmingham and some tonnage has been sold at $19. Little of this sale has been done in the Chicago district. Low phosphorus iron is inactive and unchanged. A moderate demand for Lake Superior charcoal iron prevails with prices unchanged. Silveries are quiet at Chicago but recent sales include 600 tons to Michigan and 300 tons to Indiana consumers. A readjustment involving 400 tons is equivalent to a new sale of this amount. The Jackson county schedule of $32.50 furnace for 8 per cent has applied in these transactions.

Market Exceedingly Quiet

Pittsburgh, June 6.—Suspended animation aptly describes the present pig iron market. Only occasionally is a transaction noted, one of the latest being the purchase by the McConway & Torley Co. of 1000 tons of bessemer below the going market of $25, valley. A local melter closed on 150 tons of malleable at $24, valley, or $1 below

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the point where this grade remained stationary for a few weeks. Some sellers, however, continue to name $25, valley, making the market quotable at $24 to $25, valley. What might be termed a temporary weakness in bessemer is attributable to the appearance of several lots of resale iron. One producer took back about 1000 tons below the present market. This was the purchaser's own iron and originally was bought around $32, valley. Another lot of 1000 to 1200 tons was offered by a New York state consumer under $25, the iron never having left the furnace yard of a Pennsylvania producer. No activity is noted in basic which still is quoted at $25, valley, and apparently all users have decided to wait until after July 1 before making their third quarter arrangements, practically no contracting for that period having been done to date. Consumers evidently expect cheaper iron due to lower production costs brought about by reduced freight rates, a possible reduction in ore and the expected ending of the coal strike. Bessemer and basic averages for May as compiled by W. P. Snyder & Co. were $24.40 and $24.91 respectively thus bringing basic above bessemer for the first time in many months. These averages were $3.857 and $5.61 higher respectively than were the April averages of $20.543 and $19.30 respectively. Interest in foundry iron is low. The No. 2 grade (1.75 to 2.25 silicon) remains quotable at $24 to $25, valley. One interest having only a limited amount of No. 2X to offer is obtaining $25, valley, for it. Low phosphorus copper-free iron is unchanged at $33 to $34, valley.

Buffalo Sales Are Light

Buffalo, June 6.—Sales for the past week totaled less than 10,000 tons. The market is quieter than it was with demand not so apparent. The price range continues the same $22 to $23 for No. 2 foundry (1.75 to 2.25 silicon), $22.50 to $23.50 for No. 2X (2.25 to 2.75 silicon), and $23 to $24 for No. 1X, (2.75 to 3.25 silicon). Basic price is $23 to $25, some recent sales having been made at the higher figure. The market for basic appears to be improving. One foundry even reports inquiries of 2500 tons and sales of 1000 tons. Another sold 2500 tons of foundry and malleable.

Eastern Buying Is Less

Philadelphia, June 6.—Pig iron buying in this district took a material drop during the past week and total sales do not exceed 5000 tons. The largest transaction closed involved about 1700 tons of foundry iron placed by the Norfolk & Western railroad. The foundry iron market is stronger and $24.50 to $25 base eastern Pennsylvania and New Jersey furnaces now prevails. The minimum delivered price at Philadelphia now is $25.84 for No. 2 plain (1.75 to 2.25 silicon) and $26.82 for No. 2X (2.25 to 2.75 silicon). At the same time a fair tonnage has been sold at higher equivalent furnace figures. Only two eastern furnaces now are in the market as sellers. At least two furnace which have been scheduled to go into blast will not be lighted at present due to the coke shortage. These are the Standish, N. Y. furnace and the second Midvale stack at Coatesville, Pa. At least 3000 tons of copper-bearing, low phosphorus iron

Extended statistics of American and European iron and steel production, exports, imports, freight rates, etc., pages 1682, 1683 and 1686

was sold the past week at the usual price of $30 furnace. No unsold stocks of copper free low phosphrous iron now are on hand at any furnace. Basic iron is devoid of activity but considerable buying is expected during June. Recent business closed in this grade went at prices ranging from $25 to $26 delivered, eastern Pennsylvania and price views in some quarters are higher. Demand for gray forge is restricted to occasional moderate lots. The usual asking price is $25 furnace. The Robesonia, Pa., furnace is expected to blow in June 19. It is not yet decided when the Swedeland, Pa., No. 3 furnace will blow out and No. 1 of this group will blow in.

New England Well Covered

Boston, June 6.—Pig iron consumers in New England are well covered for current needs and buying is along modest lines. Sales during the past week reported by Boston dealers are all for small lots ranging from carload to 400 tons, the total reaching but little above 3000 tons. Furnaces usually supplying New England are well sold for prompt delivery and in one or two cases are sold up through third quarter. Spot iron commands a premium over third and fourth quarter in many cases. Eastern Pennsylvania furnaces with one exception claim to be firm at a $25. base, but the fact that this gives a delivered New England figure 60 cents above the delivered figure from Buffalo district, seems to negative either the reports of price or tonnage sold from the eastern Pennsylvania furnaces. One lot of 200 tons of No. 2X Buffalo (2.25 to 2.75) silicon for third quarter was sold to a Connecticut consumer at $23.50 furnace or $28.96 delivered. This about represents the third quarter market in New England. Southern iron at $18.50 furnace takes a $10.67 rate to interior New England points, which brings the delivered price to $29.17. Rates to certain districts however, have, been recently reduced about 12 per cent for shipment by way of Providence and this brings southern iron in line with delivered Buffalo prices at these points. Inquiry for third and fourth quarter is improving. A Rhode Island melter is asking for 500 to 1000 tons of 2.25 to 3.25 silicon. An eastern Massachusetts melter is in the market for 1500 tons, and is expected to close today.

Market Temporarily Quiet

Cleveland, June 6.—Sales of pig iron by the northern Ohio group of furnaces in May amounted approximately to 275,000 tons as compared with 300,000 tons in April. With the approach of the third quarter, however, activity is temporarily lagging. Present needs having been satisfied, the market is drifting into a waiting state, neither producers nor consumers caring to advance negotiations. Surveying the coal situation, some of the manufacturers expect a still stronger market for the third quarter, and a good volume of business after July 1. One of the leading merchant producers has withdrawn quotations, and purposes not to offer iron in the open market again until a settlement in the strike appears near. This seller has been placing iron in the valley district at $24, base furnace, and its sales in April exceeded those in May. The sales of another interest which has been quoting $23, base furnace, in outlying districts, fell to 3000 tons last week from 9000 tons in the week preceding, illustrating how new business is being held up pending a clearer outlook for the third quarter. Prices of foundry iron remain firm at $23 to $24, base, for outside territory, and $24 for shipment in Cleveland. Only small lots have been placed in the week, and there does not appear to have been any new sales of basic iron which makers are holding at $25. A steel hoop manufacturing company which recently bought basic is reported in the market for 5000 tons additional. Although this may refer to one of the 5000-ton lots it recently closed. A belt manufacturing company is inquiring for 1500 tons of malleable iron for delivery in the third quarter to its Indianapolis plant.

2000 Tons Are Taken

Cincinnati, June 6.—A lot of 2000 tons of foundry iron was withdrawn from the Norton furnace at Ashland, Ky. during the past week for account of a Cincinnati dealer. The business was done at $22, furnace, base. A Cincinnati foundry closed for 100 tons for spot delivery, a Central Ohio melter bought 200 tons and a Michigan consumer 300. Other sales of smaller quantities aggregating not to exceed 1000 tons makes up the business done in the first four days of the month. There is practically no inquiry current. The southern Ohio market is quoted unchanged at $23 to $24, Ironton base. The southern market is firmer and recent advices from furnaces that have been holding back in the upward price movement, indicate but limited spot iron is available at $18.50 with quotations for third and fourth quarter uniformly at $19 Birmingham.

New Buying Is Slower

St. Louis, June 3.—The market for pig iron holds its recent strength. Much interest is displayed by consumers in receiving tonnages under contract, but there has been a decided slowing down in buying. Selling agencies attribute the lull to the fact that melters are comfortably covered in the matter of supplies. Another factor is the desire of melters to postpone further contracting until after the new freight rates become effective. Several agencies report they have had requests to hold back shipments until after July 1. Generally, however, plants are willing to accept quotas as they fall due, and the size of the present melt will not permit of much delay. Reports received from scattered interests in the district indicate a sharp increase in the melt and in operations in May as contrasted with April. No weakness has appeared, quotations on both northern and southern iron holding firm. One interest has offered southern at $17.50, Bir-

mingham and small quantities were taken at that figure, but this is an isolated interest, and the business was handled in order to enable the seller to blow in a stack. The leading local producer reports shipments about on a parity with current output. Sales reported were mainly in scattering lots of amounts under 500 tons. The only exceptions were 1,500 tons to an Illinois car builder, and 500 tons of foundry to an Evansville melter. A St. Louis stove plant took 200 tons, and other specialty shops purchased small lots aggregating about 480 tons. An East Side melter purchased a small tonnage of charcoal iron, paying $30.40 delivered.

Strength Still Noted In South

Birmingham, Ala., June 6.—Sales of pig iron during the past week were not numerous but the strength of the market was apparent. The low level in quotations is $18.50 with some little tonnage sold at $19. Indications point to another advance shortly. Production has been increased. The Sloss-Sheffield Steel & Iron Co. now is operating five out of seven furnaces. The Tennessee Coal, Iron & Railroad Co. is pushing repair work on a Bessemer furnace to resume production soon. The Central Coal & Iron Co. is expected to put in its Holt furnace soon. The No. 1 furnace of the Tennessee company at Ensley will be ready for the torch before the month is out. Pig iron consumption in home territory is steadily increasing high pressure pipe and soil pipe business being good. It is understood that sales by companies in the open market are in excess of production, despite the fact selling activity is not as good as it has been. Expectations are that buying will start shortly for the last quarter. Conners Steel Co. Birmingham producing bands and ties, has both its plants in operation.

To Enlarge By-Product Coke Oven Plant

Birmingham, Ala., June 6.—The Alabama By-Products Corp., Morris W. Bush president, let the contract with the Koppers Co. of Pittsburgh, for construction of an additional battery of 25 by-product coke ovens at its plant at Tarrant City, northeast of Birmingham. The present plant consists of 50 by-product coke ovens. The contract calls for the completion of the addition within six months. This will give this company an annual coke production of approximately 365,000 tons of low ash, low sulphur coke, 4,050,000 gallons of coal tar, 15,500,000 pounds of sulphate of ammonia and 2,060,000 gallons of light oils.

Chicago Operations Hold

Chicago, June 6.—Steel production in the Chicago district is practically unchanged, the Illinois Steel Co. operating at 85 to 86 per cent capacity and the Inland Steel Co. continuing at 70 per cent capacity. The future fuel situation prevents either of these interests increasing its present operation. The labor situation is another drawback, as sufficient men to operate the mills are difficult to obtain.

Coke Offerings Reduced

Merchant Beehive Output Lower—Ten Blast Furnace Interests Unable to Cover Requirements—Foundries Still Have Stocks

COKE PRICES, PAGE 1618

Pittsburgh, June 6.—Beehive coke output from merchant ovens is slightly reduced. An increase in the total production is due to the output from the H. C. Frick Coke Co.'s ovens. Ten prospective blast furnace coke purchasers find little or no encouragement. Negotiations continue, however, and at least one Ohio furnace has entered into an arrangement for Connellsville coke contingent on a settlement of the coal strike. Price details are withheld. The Shenango Furnace Co. extended its coke contract until June 10 when its No. 4 furnace will be blown out for alteration. The Pittsburgh Steel Co. has been accumulating coke for resumption at Monessen, Pa. and is said to have paid the going market level up to $7, ovens. Offers of coke at a minimum of $7 have been made to furnaces now in blast or about to go in, but most of those thus approached considered $7 too high. A few have stated they will defer action until after July 1, evidently with the expectation that the freight rate reduction or the possible ending of the coal strike will bring about lower fuel prices. At present the market is quotable at $6.25 to $7, ovens, the $6.25 price having applied in one transaction involving several carloads daily over a period. Foundry coke demand is somewhat limited at the moment. In certain cases, particularly where the coke is located on the Pittsburgh & Lake Erie railroad, some high prices have been obtained. Three cars were sold this week and the buyer paid a broker $8, ovens. Another single car brought $7.35, ovens. Not as much anxiety is expressed by foundry fuel consumers as was expected. Apparently they are not using as much as they were and still are drawing on stocks. Only a few users intimate that their supplies of 72-hour fuel are running low. From $7 to $7.35 is considered the quotable spot market on foundry coke today, $7.35 being the maximum paid recently on Connellsville 72-hour fuel. Higher prices up to $7.50 are quoted. The interest which recently has been accepting a few last half contracts at $5.25 has withdrawn from the spot and contract market for the time being due to some labor difficulty. Production according to the *Connellsville Courier* for the week ended May 27 was 59,130 tons as compared with 57,430 tons the preceding week.

Furnace Coke Lacking

Cincinnati, June 6.—There is little demand for coke here, Pittsburgh blast furnace interests being about the only consumers in the market. One has made a firm bid for 10 carloads to be shipped daily over a period of three months. It is said the price was satisfactory but the dealer to whom the offer was made found the tonnage would not be available. All stocks are low and the market is firm. Production conditions in both the Wise county and New River fields are less satisfactory than a fortnight ago. Less coke is being made and more coal is going direct to the coal market. Sales in May were double the aggregate in April and largely in excess of any previous month this year. The Ashland by-product ovens will not be put on production until July 1.

Coke Offerings Reduced

Philadelphia, June 6.—Offerings of coke have been greatly reduced. A number of operators have gone out of the market in the past week due to the coal strike, with the result that numerous oders have been declined by sellers. Prices are higher. On current business in beehive foundry, prices range from $7 to $7.35, Connellsville. Coke producers have withdrawn $5.25, the figure at which they were booking second half foundry coke, and now are not quoting for that period. Furnace coke is regarded as $6.50, Connellsville, but this price is nominal as furnace coke is practically unobtainable. Two furnaces which were scheduled to blow in have not done so because of inability to get coke, and they are not expected to blow in for sometime.

Store Coke As Coal Substitute

St. Louis, June 5.—Industrial consumers are showing more interest in the coke market than at any time since the strike started. A number of plants which heretofore never burned coke are now storing it for fuel. Little is coming through from the East, but there seems to be no lack of supply from the South. Prices remain steady on all grades. The Union Fuel Co. has announced a price of $9.25, delivered, on St. Louis gas coke, and $10 per ton on by-product coke. The leading East Side producer continues to quote $9.

By-Product Prices Advanced

Boston, June 6.—By-product coke producers in New England have advanced the price covering contract shipments of foundry coke to $11 per net ton, delivered to New England points, and for spot shipments to $11.50. The market shows signs of greater activity.

Furnace Coke Advancing

New York, June 6.—The coke supply is materially lighter, and many operations have been withdrawn as a result of the coal strike. Prices are mounting rapidly. Sales in the past few days have been made at $7 to $7.75, Connellsville, for foundry coke, but today the minimum seems to be $7.50. All second half-offers have been withdrawn. Furnace coke is practically unobtainable. The Seaboard by-products plant is the principal source of supply of foundry coke in this district. Prices of this producer continue equivalent to $9.84 to $10.74 delivered, Newark.

Bar Bookings Are Large

Producers Unable To Fill Demand Despite Operations—Makers Are Careful Regarding Commitments—Prices Are Tending Upward

BAR PRICES, PAGE 1618

Chicago, June 6.—Demand for soft steel bars has been sufficient to fill mill books to a point where it is doubtful if further business can be taken by any producer for delivery before the latter part of third quarter and in some cases delivery is delayed even further. All producers are operating their bar mills to capacity, sometimes at the expense of other products but are not able to keep up with demand. The bar mills of the Minnesota Steel Co. at Duluth will be started as soon as possible and will give some relief in furnishing bars for delivery which now are piling up against mills of the Illinois Steel Co. Capacity of the Duluth bar mills is about 10,000 tons per month.

Bookings are considerably heavier than shipments and demand is much in excess of bookings. During May sellers in this market could have booked many thousand tons more of steel bars had productive capacity been sufficient. The market appears stable and no sign is appearing to indicate the future has anything but increased demand. The market is quotable at 1.75c to 1.85c, Chicago mill, all prices under 1.75c having disappeared.

Excellent demand is being met for bar iron on the part of railroads and car builders and 1.70c to 1.75c, Chicago mill, is being quoted generally. Present demand for this product appears to have followed deferred deliveries of soft steel bars. Demand for hard steel bars is increasing and the market is quoted at 1.65c, mill. Some tonnage is being booked against resumption of production by the Silvis mill.

Bar Demand Falls Off

Philadelphia, June 6.—Demand for steel bars continues good but is not as active as a week ago, it being estimated that the tonnage volume is 10 to 15 points below that of the preceding week. The reason given for the falling off is that consumers are to some extent worrying over the outlook regarding a shortage of fuel supplies. Prices continue quoted 1.60c to 1.70c, base Pittsburgh. Demand for forging bars and spring steel continues satisfactory, the former selling at 1.95c base Pittsburgh, and the latter 1.85c, Pittsburgh base.

1.70c Being Obtained

Pittsburgh, June 6.—The 1.60c price fast is disappearing on merchant steel bars and is being superseded by a 1.70c. base Pittsburgh, minimum. The full market spread is 1.60c to 1.75c. So far the largest order reported taken at the 1.70c level involves 400 tons of one size, together with numerous smaller amounts. Many orders are being presented for extended delivery but makers are still careful about committing themselves. Several ordinarily attractive lots were turned down because of the uncertainty surrounding the future fuel supply. Most orders placed come from cold-drawn steel bar makers and bear relation to the automotive industry. Other orders are from spring makers, both automobile and railway, some good sized orders of the latter character being placed within the past few weeks.

In connection with refined iron, the situation remains practically the same as for several weeks past. The crucible steel interests see no great improvement as yet, consequently the demand for low phosphorous melting bars is low; the price is unchanged at 4.00c, base Pittsburgh. Only small amounts of double refined iron and regular refined iron are being bought, quotations on these grades being 4.00c and 2.10c, base Pittsburgh, respectively.

Small Rounds Are Scarce

Cleveland, June 6.—Demand for steel bars continues active in this territory. Small rounds especially are much sought and deliveries on new business run two to three months with leading producers. For shipment at mill convenience, 1.60c Pittsburgh, continues to be quoted although one producer has been selling some material for June shipment on that basis. The Lackawanna Steel Co. within the week advanced bars to 1.70c Pittsburgh. Hoops and bands are strong at 2.25c, Pittsburgh as minimum with up to 2.40c quoted.

Automobile Buying Heavy

New York, June 6.—While commercial steel bar business is not as active as a week ago, this seems to be due to the fact that so many customers are covered on their requirements. New business on forging bars and spring steel however, continues large. Both consumers and jobbers are placing orders. The biggest portion of this business is coming from the automobile industry. On soft steel bars the market continues 1.60c to 1.70c Pittsburgh, with the majority of the sales at 1.70c and some at 1.75c Forging bars range from 1.85c to 1.95c base Pittsburgh. Spring steel is going at 1.95c Pittsburgh, with 2.05c being done on less than carloads.

Current bar iron demand is not so large as buyers generally were covered ahead through the recent buying movement. The current market is 1.60c to 1.70c base Pittsburgh.

Cold-Drawn Orders Heavy

Pittsburgh, June 6.—Orders for cold-drawn steel bars are frequent and heavy. However, none is as large as the recent purchase of the Ford Motor Co. involving several thousand tons. From 100 to 1000 tons at a time is the usual order, with consumers buying all they can for 90 days or more extended delivery, and producers confining commitments as much as possible to 30 or 60 days. Mill operations are being pushed upward as much as possible, activity in this regard being governed by the receipt of hot-rolled bars from steel mills. Several cold-drawn plants are working double turn full time with a full complement of men. From 2.00c to 2.10c base Pittsburgh, is the general market with 2.25c being obtained at times on certain specifications.

Bolt, Nut, Rivet Demand Strong and Prices Firm

NUT AND BOLT PRICES, PAGE 1680

Cleveland, June 6.—Specifications on contracts for second quarter are being filed with bolt and nut makers following notices to the effect the second quarter expires the end of this month. As a result of this not only are orders numerous but are larger than has been the rule for some time. Quoted discounts are being maintained but there is considerable talk of an advance in prices, which it is said will approximate a 10 per cent reduction in discounts. Bolt and nut plants are operating from 70 to 80 per cent of capacity and while jobbers are placing most of the business considerable also has been received from the railroads, automobile interests and general manufacturers. Some export business has been placed including a number of orders from England.

Rivet prices are being firmly maintained and there is some talk of an advance. Demand is holding up well with boiler makers, railroads, automobile builders and jobbers taking most of the tonnage.

Higher Levels Expected Soon

Pittsburgh, June 6.—Before the present week is out higher levels may be announced in connection with nuts, bolts and rivets. At present the May 11 prices still prevail and are firm with large machine bolts quoted at 65-5 off. Orders are fairly numerous and for several weeks past have been increasing in size individually. Operations are well maintained on a 75 or 80 per cent basis. Numerous single carloads of rivets are being disposed of with occasional orders involving 100 tons or more at a time. The Baltimore & Ohio railroad is in the market for rivets. Structural and boiler rivets hold well to the 2.25c and 2.35c, base Pittsburgh, levels respectively. Rivet plants are running almost to capacity.

Further Bolt Advance Expected

Chicago, June 6.—Demand for bolts and nuts is stronger and present quotations are held firmly, with expectations of an advance shortly. It is believed the present schedule of discounts will be changed materially within a short time. While some fairly large inquiries have been considered and contracts made for third quarter requirements, most present business is in small lots, but in sufficient number to give a large aggregate.

Hoop Prices Are Firm

HOOP PRICES, PAGE 1618

Pittsburgh, June 6.—Producers of regular hoops and bands are firm upon the 2.40c basis recently inaugurated, registering an advance of $3 a ton. Makers of hot-rolled strip steel in hoop and band sizes likewise are obtaining that figure. Certain sizes and gages are bringing as high as 2.60c, base. Orders presented are fairly large and ofte

forts are made unsuccessfully to book quirements for the entire third quarter, t many makers are taking only what ey can comfortably produce to July 31. ey are uncertain about developments connection with raw materials, fuel pplies, etc.

Grace Asks Early Hearing on Steel Merger

New York, June 6. (By Wire)—E. G. Grace, president of the Bethlehem Steel Corp., today confirmed the announcement at Washington that the federal trade commission has requested Bethlehem and the Lackawanna Steel Co. to appear before the commission and give the reasons why acquisition by Bethlehem of Lackawanna does not constitute a violation of provisions of the federal trade commission act relating to unfair methods of competition. Mr. Grace said also that the transaction had been called to attention of the federal trade commission prior to senatorial action requiring the commission to investigate it and that in consultation with the commission on May 22 it was agreed that a brief should be submitted setting forth the position of the two companies in respect to the transaction.

"We will welcome the fullest investigation," said Mr. Grace, "and believe that when the facts in the case are fully shown the purchase will be approved. We will shortly be ready for the hearing and hope the commission will hear the case considerably in advance of the time named by it in the complaint."

Restore Manganese Duty

Washington, June 6.—Restoration of the house duty of one cent a pound on manganese ore by the senate probably will result in the imposing of a duty on ferromanganese approximating the house rate of $39 a ton. The senate finance committee, accepting defeat of its proposal which admits manganese ore free of duty, now is working out new rates in ferromanganese. It is understood that while the new rates are not quite so high as the house rates, still they will not be much less in order to maintain the relationship between ore and ferromanganese. Restoration of the duty on ore is the result of the strength of western senators. No change was made in the dividing line of 30 per cent between ferrosilicon and ferromanganese. The senate also accepts the duty of 75 cents a pound on molybdenum ore and 45 cents on tungsten.

Named for Commission

Washington, June 6.—President Harding today sent the name of Judge Vernon Van Fleet of South Bend, Ind., to the senate for confirmation as a member of the trade commision. Judge Van Fleet is now in the department of justice and originally was considered for the commission before the nomination of George W. Upton of Warren, O.

Plate Market Less Active

Twenty Thousand Tons Involved in New Great Lakes Vessel Contracts Pending—Some Makers Inquiring for Material

PLATE PRICES, PAGE 1618

Chicago, June 6.—Demand for steel plates is coming principally from builders of railroad cars. Current inquiry for new cars and repairs will require about 42,000 tons of steel of which the major portion will be plates. The leading interest is well sold on this product, but the Inland Steel Co. is able to give five to six weeks delivery. Quotations range from 1.75c to 1.85c, Chicago mill, which is slightly higher than recently. General demand from users of plates for tanks and boilers is holding up well.

Orders Make Up Good Total

Philadelphia, June 6.—Eastern plate mill operations are averaging 60 per cent or better, which represents considerable improvement in recent weeks. While large orders are lacking there is an increasing volume of moderate and small tonnages. The total is good. Prices on current business range from 1.60c to 1.75c, though 1.60c is exceptional and at this price it is a case of selecting the business.

Large Marine Tonnage Pending

Cleveland, June 6.—About 20,000 tons of steel are involved in further vessel contracts which are pending before lake yards. This includes 11,000 tons for the two large passenger vessels which have been under negotiation for some months and now appear likely to be awarded very soon, and 9000 tons for two bulk freighters. An inquiry for 20 stills for Standard Oil interests, 500 to 600 tons, came out this week. New tonnage appears slightly less active. Where attractive orders appear, it still is possible to develop 1.60c Pittsburgh price, this latter coming both from the leading producer and certain independent interests. One of the latter has been selling certain sizes of plates for June delivery at 1.60c. The Lackawanna Steel Co. during the week advanced its price on plates to 2.00c Pittsburgh, a figure which several other mills recently have been asking.

Tonnage Orders Less Numerous

Pittsburgh, June 6.—Plate tonnages placed involve up to 1000 tons each, although in the past week the larger ones have not been so numerous. This has been more to the makers' choice than to any other reason. They still are uncertain about future fuel supplies. Some inquiries involve 800 to 1000 tons for tanks and in the past week makers of plates for boiler and oil well use have been active as plate inquirers. One inquiry is current here for tanks for the Cleveland district involving 900 tons and one or two others from points further west. Bids will close June 21 on tanks for the navy department at Panama involving about 1200 tons of plates. The Pittsburgh-Des Moines Steel Co. recently was awarded a few small jobs including one at Bay City, involving 150 tons, and a smoke stack at Boston, requiring 250 tons.

Steel Ingot and Casting Output Slumps in 1921

As a result of the low rate of production which obtained throughout 1921, the total output of steel ingots and casting showed a loss of 22,389,137 gross tons from the 1920 output, according to official figures just announced by the American Iron and Steel Institute. During the year 19,743,797 gross tons of ingots and castings were made, of which 19,184,084 tons was ingots and 559,713 tons was castings. The corresponding figure for 1920 was 42,132,934 tons, consisting of 40,881,392 tons of ingots and 1,251,542 tons of castings.

Production of finished rolled iron and steel products totaled 14,774,006 tons as compared with 32,347,863 tons in the preceding year.

Following are the principal production figures for 1921 and 1920:

STEEL INGOTS AND CASTINGS

	1921 gross tons	1920 gross tons
Steel ingots		
Basic, open hearth	14,824,607	30,926,393
Acid, open hearth	290,750	759,102
Bessemer	3,977,129	8,778,107
Crucible	6,877	70,536
Electric	84,404	346,956
Miscellaneous	317	298
Total	19,184,084	40,881,392
Steel castings	559,713	1,251,542
Total, ingots and castings	19,743,797	41,132,934
Alloy steel castings	809,548	1,660,292
FINISHED ROLLED IRON AND STEEL		
Iron and steel rails	2,178,818	2,604,116
Plates and sheets	4,260,574	9,337,680
Nail plate	14,573	20,577
Wire rods	1,564,330	3,136,907
Structural shapes	1,272,624	3,306,743
All other finished rolled products	5,483,087	13,941,835
Total	14,774,006	32,347,863
PLATES AND SHEETS		
Universal plates	570,610	1,249,769
Sheared plates	1,189,714	3,505,364
Black sheets	1,511,817	2,886,401
Black plates	988,433	1,696,146
Total	4,260,574	9,337,680
MERCHANT BARS		
Iron bars	198,324	663,032
Steel bars	1,367,430	5,467,208
Total	1,565,754	6,130,240
CONCRETE BARS		
Iron bars	1,094	698
Steel bars	226,134	571,747
Total	227,228	572,445
SKELP		
Iron skelp	115,523	252,403
Steel skelp	1,815,052	2,967,886
Total	1,930,575	3,220,289
TIN AND TERNE PLATE		
Tin plate	1,675,320,852	3,079,953,351
Terne plate	101,443,069	138,224,379
Total	1,776,763,921*	3,218,177,730*
WIRE NAILS		
Total	11,889,412**	14,362,311**

*Pounds ** 100-pound kegs.

Scrap Consumers Sold Up

Markets Generally Listless but Considerable Activity Reported in Mahoning Valley with Heavy Purchase of Eastern Railroad Material

SCRAP PRICES, PAGE 1684

Chicago, June 6.—Consumers of iron and steel scrap at Chicago are listless as to further supply and there is practically no buying, especially in steel grades, on which fairly large purchases were made recently, sufficient for demands of most users. As a result prices are somewhat weaker, although not much below the peak. Apparently scrap is being received by consumers faster than needed, evidenced by the unusual proportion of rejections, which usually follow a surplus at the mill. Buying of rolling mill grades is moderate and foundries are not taking much cast scrap. Offerings by railroads are not large, the only important list at present being one by the Chicago, Milwaukee & St. Paul railroad for 1260 tons.

Borings and Turnings More Active

Boston, June 6.—While the scrap market in New England continues dull, recent improvement in demand for borings and turnings is reported by several dealers and the tonnage moved during the week in this grade has been larger than in several weeks, probably reaching 1500 tons total. The price as a result is firm although several dealers still are able to secure mixed borings and turnings delivered for $8. Any sizable lot, however, commands $8.50. Chemical borings after two or three weeks lull are again in demand from New Jersey consumers and the supply has suddenly become scarce. A recent sale of 200 tons was made at $10.50 shipping point. Heavy melting steel is dull. Dealers in Boston look forward to the reduced freight rates which will bring them 15 to 20 cents closer to New York for shipment to western Pennsylvania.

Cast scrap is moving in small lots only and at prices which are not strong. No. 1 textile machinery scrap recently was sold at $18.50 delivered to consumer. Little change is reported in any of the scrap prices.

Shows More Strength

Cleveland, June 6.—The scrap market is appreciably stronger than last week in consequence of activity among Mahoning valley consumers in taking all tonnage offered. New buying is not important but contract shipments are being absorbed with much greater willingness. In fact valley mills just now are taking more scrap tonnage than those of any other district. Practically none is going to Cleveland plants, all of which are heavily stocked on most grades. Mixed borings and turnings are up from $11.75 and $12 to $12.50 and $12.75; shovel turnings for blast furnace use from $11.75 and $12 to $12.50 and $12.75; cast borings from $11.75 and $12.25 to $12.50 and $13. In the valleys heavy melting steel has been advanced from $17.25 and $17.50 to $17.50 and $17.75; cast iron borings from $13.25 and $13.75 to $14.25 and $14.75; and No. 1 cast from $17.75 and $18.25 to $18 and $18.50.

Demand Is Quiet

St. Louis, June 5.—Iron and Steel scrap has run into a period of quietness. Prices hold fairly strong, this being in sympathy with scrap at eastern centers and a moderate inquiry from that general region. There was some scattered buying, but with one exception, no single tonnages of size changed hands. Offerings by dealers are not heavy, except in the case of rails, which is rather abundant. Steel specialties are relatively in better demand than other assortments. Cast scrap, while in less urgent demand, is holding its own, and grate bars are scarce and strong. Heavy melting steel is quiet and soft, but car wheels are active and slightly higher. Railroad offerings includes Missouri, Kansas & Texas, 1150 tons; Pennsylvania, southwestern region, 6000 tons and Louisville & Nashville, 10,000 tons. Dealers say there is a disposition on the part of melters to put off buying until after the new freight rates be-

(*Continued on Page* 1631)

Sheet Bars Lead in Sales

Demands Only Partly Satisfied, though Bookings Continue Heavy—Spot Material Scarce—Third Quarter Prices Uncertain

SEMIFINISHED STEEL PRICES, PAGE 1618

Pittsburgh, June 6.—Consumers still are making efforts to buy semifinished steel, mainly sheet bars for third quarter requirements. One nearby sheet producer wants a few thousand tons for third quarter, and others would make formal inquiries if there was any encouragement to do so. Not many steel mills can take on additional tonnage. What is being sold is going at $35, Pittsburgh or Youngstown. This price applies to sheet bars, slabs and 4 x 4-inch rerolling billets. Smaller billets are quoted at $37, the regular $2 differential above 4 x 4 price. About 500 tons of forging billets were sold by one producer in this district last week at $40, Pittsburgh, although prices quoted in other sections still are as low as $37, Pittsburgh base. Some of the forging companies are becoming more active and pay the $5 differential for billets of forging quality without question, carbon and size extras being obtained in addition. Fair sized tonnages of wire rods have been booked at $38, although certain mills will not accept less than $40. Nothing much is heard with reference to skelp, most producers needing their entire output themselves or applying it upon regular contracts. Only an occasional inquiry is noted and the prices remain unchanged at 1.60c to 1.75c, base Pittsburgh.

The Republic Iron & Steel Co. announces a price of $35 for sheet bars for July on what tonnage it has available.

Await Third Quarter Prices

Youngstown, O., June 6.—Consumers of sheet bars are awaiting an announcement of third quarter prices. Some action may be expected within the next 10 days. A small volume of business has been taken for delivery during July at $35, Youngstown, by one maker whose policy is not to quote beyond this period. The remaining two producers here continue out of the market. A good demand exists for slabs, billets and sheet bars, but in view of the unsettled conditions in the coal fields producers are not anxious to sell. Prices of all three commodities center around $35, Youngstown.

Forging Billets Sold

Philadelphia, June 6.—Sales of semifinished material in the past week were comprised chiefly of open-hearth forging billets. Several thousand tons changed hands at $38 to $40, base Pittsburgh, although the disposition is to regard $40 as the minimum. Very little business was done in rerolling billets. The market is not being tested, and is quoted nominally at $35, base Pittsburgh. Good business continues in wire rods at $38 and $40, Pittsburgh. Sheet bars are nominal at $35, Pittsburgh.

Book Round Tonnages

Cleveland, June 6.—Sales of sheet bars continue to predominate in the semifinished market. The local producer which has been very active in recent weeks, again booked a considerable quantity of sheet bar business in the week estimated at 15,000 to 20,000 tons for delivery through the third quarter. This business went at $35, Pittsburgh or Youngstown, for sheet bars. The same price is being asked on 4 x 4-inch billets and slabs. A local consumer is reported to have been a recent purchaser of about 10,000 tons of sheet bars. Various inquiries for sheet bars for delivery through the third quarter continue to come out but most makers are not willing to sell so far ahead. The inquiry for 7500 tons for the third quarter referred to last week still is unplaced.

Strip Prices Advanced

STRIP PRICES, PAGE 1618

Pittsburgh, June 6.—In opening books for the third quarter late last week, strip steel makers advanced the price of cold-rolled $5 per ton to 4.00c, base Pittsburgh, and at the same time advanced hot-rolled $3 per ton from a minimum of 2.25c to 2.40c, ba

ittsburgh. As high as 2.60c, however, obtained on certain specifications. As regards hot-rolled strip steel, producers are limiting commitments to approximately 50 per cent of capacity to make because of the uncertainty surrounding supplies of raw material, fuel, etc. They wish also to have some capacity in reserve properly to serve their regular customers who are unable to anticipate wants whenever they come in as transient buyers. Hence, in certain directions, almost as much tonnage is being turned down as is being booked. Contracts involving 750 to 1000 tons at a time already have been closed and more negotiations are in progress since all consuming lines, led by the automotive industry, are active. Several representative automobile producers closed on large tonnages of hot-rolled the past week.

Tin Plate Orders

Are Fairly Sizable And Mill Operations Continue At High Rate

TIN PLATE PRICES, PAGE 1618

Pittsburgh, June 6.—Tin plate buyers securing supplies in this district continue to place fairly large orders. A great many buyers, however, are closing on a carload or two at a time. This is the case with a large local steel company which is operating its tin plate department in full. The American Sheet & Tin Plate Co. announced on June 2 that $4.75 per base box of 100 pounds, Pittsburgh, will continue to prevail over the remainder of the year to manufacturers but only over the third quarter to jobbers. This announcement was followed by the receipt of some fair sized orders both from jobbers and manufacturers. Around 85 per cent represents the general average of tin mill operation with 80 per cent the average of the American company's plants. The McKeesport and Standard Tin Plate Companies, the Trumbull, Liberty and Weirton Steel companies, the N. & G. Taylor Co. and the National Enameling & Stamping Co., with certain individual plants of the American company, are among the tin plate plants working 100 per cent. The Follansbee Brothers Co.'s six tin mills were off on account of a broken shaft but are resuming.

Specifications Are Good

Philadelphia, June 6.—Tin plate specifications continue good but there is little activity in new business. Independents have been awaiting the Steel corporation's price policy as regards third quarter for which it will continue to quote $4.75 per base box.

Fuel Shortage Delaying Operations in East

Philadelphia, June 6.—For the first time since the beginning of the coal strike fears are being felt in the East over fuel supplies. One steelmaker which expected to start up more open hearths is unable to do so because it cannot get coal. Other mills find it difficult to buy coal. The coke situation also is less satisfactory, and at least two furnaces scheduled to blow in are unable to do so.

Sheet Prices Extended

Some Mills Following Leading Interest in Continuing Present Quotations Until Aug. 1—All Grades in Heavy Demand

SHEET PRICES, PAGE 1618

Pittsburgh, June 6.—Good specifications have been received by the American Sheet & Tin Plate Co. since it announced last Friday that sheet prices prevailing since early in April will continue in force on material to be shipped to Aug. 1. This postpones the formal opening of the books for the third quarter. The prices are as follows: Blue annealed, 2.40c; black, 3.15c; galvanized, 4.15c; and No. 22 gage full-finished automobile, 4.50c, all base Pittsburgh. Some independents are quoting $5 per ton in advance of those levels, namely 2.65c, 3.40c, 4.40c, and 4.75c, respectively. A few are quoting 2.75c, 3.50c and 4.50c on blue annealed, black and galvanized, respectively, or $7 per ton above the leading interest's levels. All grades are in heavy demand, some producers noting an influx of galvanized business for building construction and general manufacturing purposes. The inflow of automobile tonnage continues unchecked, users making strong efforts to have makers accept more tonnage than they care to take. Makers of medium-priced automobiles are maintaining high operating schedules. A fair demand exists for specialties, and export tonnages appear from time to time. The leading interest's general average for sheet mill operation continues unchanged at about 90 per cent of capacity.

New Prices Indefinite

Youngstown, O., June 6.—A few makers of sheets in this district are willing to book tonnages for July delivery at 2.75c for blue annealed, 3.40c for black and 4.40c for galvanized, base, Pittsburgh, although the majority of producers have not opened books for third quarter business. While third quarter prices are somewhat indefinite, it is intimated that an announcement will be forthcoming within the next 10 days. Meanwhile mills continue to work off second quarter tonnages. One or two probably will carry over considerable tonnage of galvanized into July. Full finished sheets are in good demand. Delivery cannot be had under six weeks. While the present price for full finished sheets is 4.50c, base, Pittsburgh, it is doubtful whether less than 4.75c, Pittsburgh will govern business for next quarter delivery. While definite information is lacking it is rumored that an advance of $5 a ton will be put into effect on this grade soon. Operation of sheet mills throughout the valley is on an 88 per cent basis this week, and may be increased to 90 per cent next week if present plans of the Brier Hill Steel Co. to resume activities at its Empire plant are carried out.

Third Quarter Sheets Scarce

Chicago, June 6.—Steel sheets for delivery during the third quarter are difficult to obtain, both the important producers in this district having little if anything to offer during that period. Mill labor is lacking and present bookings may cover production for even a longer period unless conditions in this respect change for the better. While the principal producer is quoting 2.40c, 3.15c and 4.15c, Pittsburgh, for blue annealed, black and galvanized, respectively, the independent maker is quoting 2.50c, 3.30c and 4.30c, Pittsburgh, on corresponding grades. Demand for sheets is heavy but present circumstances make it impossible for producers to take much of the business.

Follow Corporation's Policy

Philadelphia May 6.—Sheet makers who were waiting for the development of the United States Steel Corp.'s policy with respect to sheet prices for the third quarter are uncertain what to do now that the corporation has decided to continue quoting its present prices through July. The independent mills are not disposed to quote for the third quarter, except where the character of the business is such that protection is required. Current prices for blue annealed range from 2.40c to 2.75c, base Pittsburgh, 3.15c to 3.30c for black and 4.15c to 4.30c for galvanized. The lower figures applying to requirements of regular customers. Specifications and new business continue good. Some independents are following the decision of the Steel corporation to sell ahead only through July. They booked large tonnages for the second quarter with the understanding that deliveries would be continued after July 1. In some quarters it is believed that such selling was one reason for the Steel corporation's decision to sell through July at present prices.

Cleveland Warehouses Advance Prices

WAREHOUSE PRICES, PAGE 1680

Cleveland, June 6.—To bring quotations more in line with those from mill, local jobbers have advanced prices on shapes, plates and bars $2 a ton, and on hoops and bands $5 a ton. Shapes and plates now are quoted 2.51c, bars 2.41c, and hoops and bands 3.06c, all base Cleveland. In connection with sheets while warehouse prices are holding at the old levels, a leading jobber here reports he has been offered tonnage from mills for June and July delivery at prices of 2.40c to 2.75c for blue annealed and 4.15c to 4.30c for galvanized. It is obvious, this jobber states, that plenty of tonnage is available at mills and therefore it is not likely warehouse prices on this class of material will be advanced. Demand is general and is holding up well.

Demand Is Active

New York, June 6.—Jobbers report May was by far the most active period in many months. Shapes, sheets and bars are attracting consumers principally, although, with the possible exception of plates practically all products are moving freely. Prices are strong, but unchanged.

Shape Buying Increases

Week's Awards Increase Nearly 6000 Over Week Ago—Smaller Tonnages Again Becoming Numerous—Firm Prices Continue

STRUCTURAL SHAPE PRICES, PAGE 1618

Pittsburgh, June 6.—Local building projects of size rapidly are being cleared up and at the moment nothing sizable is up. On June 14 bids will close on an airplane hangar for the navy department at San Diego involving 1500 tons of structural steel and on June 24 the navy department will close bids on wireless towers for San Francisco, approximately 600 tons. Numerous small awards continue to be noted, one fabricator stating that one month's sales recently numbered 124 but involved only about 4000 tons. Some awards of two or three weeks ago now are gaining publicity. The largest of these is the five Schenley apartments of the Bellefield Co., 4000 to 5000 tons, which went to the McClintic-Marshall Co. Structural shapes are quoted at 1.60c to 1.75c, base Pittsburgh, with mills more reluctant than ever to take on obligations for future delivery; 1.75c is the more general price at present.

Bridge Tonnage Is Pending

Cleveland, June 6.—New building projects in this territory still are relatively few, although several tonnages of good size now are up for figures for projects not yet identified. An inquiry for 1000 tons has come up from Akron and another proposal involving a considerably larger tonnage also is pending. Bridge builders in this district are bidding on about 10,000 tons of railroad bridge work, the largest lot of which is 8000 tons for the Michigan Central bridge at Niagara Falls. Structural shapes continue to be sold at 1.60c, Pittsburgh by some of the larger mills for delivery in five or six weeks although one producer also has been booking certain sizes for June delivery at this figure. The Lackawanna Steel Co. during the week advanced shapes to 1.80c Pittsburgh.

Fewer Large Tonnages Out

Chicago, June 6.—Apparently most of the large projects involving structural shapes have been closed and demand at present is for smaller tonnages but in much larger number, giving a fair aggregate total. Plain material is somewhat higher and the minimum on shapes now seems to be 1.75c, Chicago, while rumors are heard of higher figures being obtained. On light structurals difficulty is experienced in obtaining delivery during third quarter but on heavy sections 60 to 90 days can be done by the leading independent producer.

Month Starts Slowly

New York, June 6.—June in the structural market has started off rather slowly. Few more projects have come up, and relatively little buying has taken place. Some characterize the lull as seasonal, although scarcity of some building materials and a shortage in certain lines of labor are recognized as factors. Prices are virtually unchanged at around 1.70c, Pittsburgh, for shapes, although some mills are getting a premium for early shipments and $70 to $75 a ton erected on fabricated material.

Structural Demand Brisk

Philadelphia, June 6.—Demand for structural shapes and fabricated material in this district continues brisk and eastern mills are having no difficulty in maintaining operations on full schedules. The only uncertainty appears to be that caused by the uncertain fuel situation. So far, however, the only effect the coal shortage has had on operations has been the inability of an eastern steel company to operate its open-hearth furnaces. This company continues to roll cold-rolled steel. Current business continues to bring 1.60c to 1.70c base Pittsburgh, the latter being more frequently named than the former.

Awards Fall Slightly

Boston, June 6.—While recent awards have fallen off some below the average for May, prices show signs of greater strength and observers feel the seasonal peak has not yet been reached. Shapes still are being sold at 1.60c base Pittsburgh on specification but deliveries are slowing and fabricated prices are firm.

CONTRACTS PLACED

Awards reported this week	**23,890 tons**
Awards reported last week	**18,560 tons**
Awards reported two weeks ago..	**15,862 tons**

4000 to 5000 tons, five apartment houses, Schenley district, Pittsburgh, to the McClintic-Marshall Co., Pittsburgh.

2700 tons for gas holder for San Diego Consolidated Gas & Electric Co., San Diego, Cal., to Riter-Conley Co.

1500 tons for two Y. M. C. A. buildings, Pittsburgh, to the McClintic-Marshall Co.

1200 tons, armory and recreation building Girard college, Philadelphia to the Shoemaker-Satterthwait Bridge Co.

1200 tons, building for Viscos Co., Lewiston, Pa., to Belmont Iron Works.

1100 tons for addition to the Empire building, Pittsburgh, to the American Bridge Co., Pittsburgh.

1100 tons, apartment for J. E. R. Carpenter, Ninety-sixth street, New York, to the Phoenix Bridge Co.

950 tons for building for the Newton Steel Co., Newton Falls, O., to the McClintic-Marshall Co.

900 tons for automobile assembly plant, Green Island, N. Y., to the Lackawanna Bridge Works Corp.

800 tons, apartment house, Sacramento and Powell streets, San Francisco, to Dyer Bros.

800 tons, building for the Richmond Trust Co., Richmond, Va., to McClintic-Marshall Co.

736 tons for store building for Clark & Co., Peoria, Ill., to reinforced concrete, Jobst & Son, general contractor.

700 tons, penstock work for Gorge plant of Skagit river development, to Puget Sound Machinery Depot, Seattle.

650 tons, building for Kieckheffer Container Co., Camden, N. J., to the McClintic-Marshall Co.

600 tons, building for the United States National Bank, Johnstown, Pa., to Jones & Laughlin Steel Co.

600 tons, Masonic hospital, Decoto, Cal., to Central Iron Works.

302 tons, boiler shop, Seattle, to American Bridge Co.

301 tons for boiler shop for Washington Iron Works, Seattle, Wash., to United States Steel Products Co., Pacific Coast department.

300 tons, apartment house, Pine and Powell streets, San Francisco, to Dyer Bros.

300 tons for addition to the building for the A. W. Jacks Paper Co., Lockport, N. Y., to the Jones & Laughlin Steel Co., Pittsburgh.

279 tons for temple at East St. Louis, Ill., for Ainad Temple association, to St. Louis Structural Steel Co.

250 tons, hotel, Fresno, Cal., to Dyer Bros.

200 tons, refrigerating plant, Bakersfield, Cal., to Dyer Bros.

190 tons for bridge over Yazoo & Mississippi Valley railway at Vicksburg, Miss., for Alabama & Vicksburg Railway Co., to American Bridge Co.

162 tons for body plant at South Bend, Ind., for the Studebaker Corp., to Kenwood Bridge Co.

154 tons for four 65-foot single track deck plate girder spans for bridge No. 18, Louisville division, for Pennsylvania railroad.

125 tons, coal shed for Callaway Fuel Co., Milwaukee, to Milwaukee Structural Steel Co.

150 tons of plate work at Bay City, Mich., to the Pittsburgh-Des Moines Steel Co., Pittsburgh.

150 tons, for Childs' restaurant, Buffalo, to the Kellogg Structural Steel Co.

140 tons, Community building for North Avenue Advancement association at Milwaukee, to Milwaukee Structural Steel Co.

123 tons for signal bridges for Illinois Central railroad to Kenwood Bridge Co.

119 tons additional, Rosseau building, San Francisco, to Central Iron Works.

109 tons for office building for Capt. W. C. Tyrrell, Port Arthur, Tex., to Virginia Bridge & Iron Co.

CONTRACTS PENDING

8000 tons for bridge at Niagara Falls, N. Y., for the Michigan Central railroad, bids to be taken June 15.

2800 tons, for Delaware river bridge piers, joint general contractors Keystone State Construction Co. and Holbrook, Cabot & Rollins Corp.

1500 tons for airplane hangar at San Diego, United States navy department; bids taken until June 14.

1200 tons of plates for tanks for the navy department at Panama; bids taken until June 21.

1000 tons, for power house for Saxon, Pa., bids being taken by Day & Zimmerman, Philadelphia.

1000 tons, apartment West Eighty-first street, New York, Joseph Siegel general contractor.

1000 tons for bridge work for Big Four railroad, bids being taken.

1000 tons for bridge work for Kansas City Southern, bids being taken

900 tons of plates for tank work at Cleveland bids being taken.

600 tons for wireless towers for the navy department at San Francisco; bids taken until June 24.

500 tons, loft at Madison and Twenty-eighth street, New York, pending.

450 tons, 9-story building, East Forty-ninth street, New York, pending.

400 tons, building for the S. S. Kresge Co., Detroit, bids being taken.

290 tons, extension to building No. 368, navy yard, Bremerton, Wash., reported placed with McClintic-Marshall Co., not yet awarded.

250 tons, new saw and planing mill at Sault Ste. Marie, Mich., for Cadillac Lumber & Chemical Co. Bids being taken. 150 tons additional to come up later.

138 tons, including some bars, three highway bridges, Portland, Oreg., bids in.

100 tons, Bank of Italy, Sacramento, Cal., bids in.

100 tons, club house, Johnstown, Pa.; bids being taken.

100 tons, filtration plant, Tonawanda, N. Y.; bids being taken.

New Amalgamated Sheet Agreement Signed

A new working agreement for the ensuing year was signed at Atlantic City this week by representatives of the Western Sheet and Tin Plate Manufacturers association and the Amalgamated Association of Iron, Sheet and Tin Workers

The sheet and tin mill scale in effect in last agreement was unchanged, though a few minor changes were made in footnotes, relating to working conditions. The tin house scale was made to incorporate a 5 per cent reduction on base prices. Following this the representatives of the Amalgamated association began negotiations for a new agreement with representatives of the Western Bar Manufacturers' association.

Wire Demand

Continues Heavy and Bookings Exceed Shipments; Prices Are Holding

WIRE PRICES, PAGE 1618

Chicago, June 6.—While demand for barbed wire is less than during the past few weeks, this falling off is welcomed by makers since former demand was far beyond the ability of mills to meet. General demand for wire and nails continues heavy and bookings are in excess of shipments. At the same time all consumers are seeking immediate shipment and inasmuch as stocks have been exhausted, it is necessary to wait the ability of mills to produce. Prices are unchanged, the principal producer quoting 2.40c, Pittsburgh, for plain wire and 2.50c for nails. Independent makers are holding the market $2 higher.

Brisk Demand In East

New York, June 6.—Wire and nail demand continues brisk. Makers generally refuse to book business ahead. All the wire business is going at 2.25c Pittsburgh and nails generally at 2.40c, although a considerable amount of it is at 2.50c. Wire rods are very difficult to get and prices are tending higher. A couple cases developed the past week where independent makers booked third quarter wire rods at $38 base Pittsburgh. This price is exceptional and most tonnage is booked at $40.

Good Demand Continues

Philadelphia, June 6.—Wire and nail demand continues good. Practically all wire business is being placed at 2.40c base Pittsburgh, but considerable business also has been done at 2.50c, Pittsburgh.

Makers Pursuing Regular Course

Pittsburgh, June 6.—Makers of wire products are pursuing their regular course in negotiating 60-day arrangements with customers rather than for the entire third quarter. This applies to independents and the American Steel & Wire Co. The latter is able to proceed a little further along this line than others due to the fact the leading interest's prices on wire nails, barbed wire, staples, coated nails, etc., are $2 per ton lower. On nails for instance, its price remains 2.40c, base Pittsburgh, while the independents maintain 2.50c as the market's minimum. Cement coated nails are quoted at 1.90c to 2.00c, the latter being the quotation of the independent producers. Demand is improving slightly. In connection with plain wire at 2.25c and galvanized wire at the 50-cent differential above that figure, all makers are on the same footing. Demand continues fair with deliveries interfered with somewhat by the coal strike.

Car Buying in May Lower

Awards Aggregate Only 18,240 After 31,490 Are Placed in April—Year's Purchases to Date 87,225—More Orders in Sight

RAILROAD TRACK MATERIAL PRICES, PAGE 1618

New York, June 6.—Freight car buying last month fell off, the total number of cars placed being 18,240, as against 31,490 in April. However, the total is in excess of business in any of the first three months of the year, and brings the volume of the year's business to 87,225. The outstanding order of the past month calls for 6190 cars for the Southern railroad. New inquiry in May was smaller than buying, there being 13,740 freight cars brought out. Passenger car awards aggregated 151, as against 580 in April. In addition, 150 elevated railroad cars were placed. Locomotive awards totaled 112, as compared with 355 the previous month.

Recent freight car orders have aggregated more than 2500 cars, while new inquiry is slight. Locomotive awards involve 23 as follows: Argentine State railways, nine; Pacific State Lumber Co., one; Erie, five; John Marsch, Chicago, four; and Akron, Canton & Youngstown, two, all going to the Baldwin Locomotive Works; and the Brownell Improvement Co., two, awarded the American Locomotive Co. New inquiry includes 10 for the Nashville, Chattanooga & St. Louis.

More Cars Coming Out

Chicago, June 6.—Inquiries are current in the market for at least 4000 new freight cars and repairs on more than 3000 others are being figured. These cars will involve a total of about 42,000 tons of steel, most of which naturally would come from this market. In the present congested condition of mill books it is difficult to imagine where this tonnage can be placed except for late delivery.

Buying of standard steel rails is negligible and except for small lots to fill in, the largest during the past week being 2000 tons, little is being booked. However, track fastenings are in strong demand and three orders taken by one producer during the past few days total 20,000 kegs of bolts and spikes. The Baltimore & Ohio railroad is in the market for 5000 kegs of spikes.

Demand Improving

Philadelphia, June 6.—Railroad demand for miscellaneous track material continues to improve. Considerable frog and switch tonnage is being placed regularly. The Pennsylvania railroad has distributed some good sized tonnages for tie plates.

Carload Orders Representative

Pittsburgh, June 6.—Rails of light sections continue in small demand. Single carload orders are representative. Such orders as are being booked continue to come from coal mine operators. Quotations remain unchanged at 1.50c to 1.60c, base Pittsburgh. Prices on relaying rails are $24 to $27, Pittsburgh. The Baltimore & Ohio railroad recently took between 6000 and 8000 kegs of spikes. Standard railroad spikes are firm at 2.25c with small, boat and barge spikes unchanged at 2.50c. Spasmodic buying of track bolts, tie plates, etc., continues, the aggregate permitting slightly higher operations. Track bolt quotations continue to show a wide variation, from 3.25c to 3.50c being usual although the 3.00c price still is being named in competition. The trend also is higher in tie plates here with 1.75c applying only upon exceedingly attractive specifications. Between that figure and up to $38 per ton, or 1.90c, base Pittsburgh, is becoming more common.

CAR ORDERS PLACED

Pere Marquette, 500 box cars, to the Pressed Steel Car Co.

Baltimore & Ohio, 1000 gondolas to Cambria Steel Co., 2000 hopper and gondola repairs to Pressed Steel Car Co., and 1000 coke car repairs to Standard Steel Car Co.

Roxana Petroleum Co., 25 tank cars, to the General American Tank Car Corp.

Pennsylvania Salt Mfg. Co., Philadelphia, 10 tank cars, to the General American Tank Car Corp.

New York, Chicago & St. Louis railroad, seven passenger cars to the Pullman Co.

The Seaboard Air Line, 900 steel underframe box cars to Pressed Steel Car Co.; 100 phosphate cars to Magor Car Corp.

CAR ORDERS PENDING

Baltimore & Ohio railroad, 1000 box cars; repairs on 100 box cars.

New York, Chicago & St. Louis railroad, 1000 automobile box cars, bids asked.

Wabash railroad, 1500 box cars; 2050 steel gondola bodies, bids asked.

Chicago Great Western railroad, 500 box cars; repairs to 245 box cars, bids asked.

New York Central railroad, repairs for 2000 miscellaneous cars, bids asked.

Union Refrigerator Transit Co., Milwaukee, 150 steel underframes, bids asked.

Buffalo & Susquehanna, 100 gondolas, pending.

Pittsburgh Crucible Steel Co., 15 flat cars pending.

Furnace Operations at Pittsburgh Unchanged

Pittsburgh, June 6.—Blast furnace operations in the Pittsburgh district remains practically unchanged. The Carnegie Steel Co. still has 36 out of 59 stacks active. The Jones & Laughlin Steel Co. banked one in May, six of its 12 now operating. The Brier Hill Steel Co. has all three of its blast furnaces blowing, having added the third late last week. The Shenango Furnace Co. late this week or early next will blow out its smaller furnace at Sharpsville, Pa. for repair or alterations. The Pittsburgh Steel Co. has been endeavoring to resume operation at Monesson, Pa. Steel making by the Carengie company remains at approximately 76 per cent of capacity.

In the near future puddling furnaces of the Lockhart Iron & Steel Co. are scheduled for resumption and the new foundry of the National Standard Pump & Machine Co., Oil City, Pa., will be started soon with a double working force.

Concrete Bars Congested

Mills Delaying Deliveries, Causing Some Confusion—Placing of Contracts and Appearance of New Work Continues Actively

REINFORCING BAR PRICES Page 1618

Pittsburgh, June 6.—With deliveries of reinforcing concrete bars from the mills so much deferred, fabricators are having difficulty in quoting intelligently on building projects. Some have ceased to name a mill price and at the same time have increased their stock price from 2.10c to 2.25c, base Pittsburgh, with the possibility of 2.50c being inaugurated as a minimum before a week or so. Quotations from the mills still are 1.60c to 1.75c, base Pittsburgh. Awards include a Pittsburgh building for the National Supply Co. Numerous small jobs are up for consideration involving from 20 to 100 tons each, including a club house at Johnstown, Pa., and a filtration plant at Tonawanda, N. Y.

Below 1.60c Is Named

Cleveland, June 6.—While 1.60c Pittsburgh usually is considered the market basis on concrete reinforcing bars. Some business was done in this district this week by local mills with freight advantages, around 1.55c Pittsburgh. This is equivalent to 1.76c Cleveland. Bids are about to be taken on 840 tons for a new design for the Ward Bakery Co. building, this city. The 1000 tons for the Union Trust Co. building remains unplaced. It is reported an effort is being made to award this to a local company with warehouse facilities so that the material can be delivered.

Sellers Dodge Business

Chicago, June 6.—Most sellers of reinforcing bars have sufficient business on books to make them choose carefully what further business they take, and a number are refusing to bid except on the most attractive. Some new projects are coming out in moderate tonnages, but most business now is made up of numerous small lots which form the most attractive business for most sellers. Bids have been opened on the general contract for the Grant Park stadium, which will require a large tonnage of reinforcing bars which will come out later.

CONTRACTS PLACED

Awards reported this week..... 5,285 tons
Awards reported last week..... 6,055 tons
Awards reported two weeks ago..... 3,958 tons

145 tons for community building for North Avenue Advancement association, Milwaukee, to Truscon Steel Co.

100 tons for new Commercial National Bank building, Fond du Lac, Wis., to Paul J. Kalman Co.

700 tons, addition to plant of Studebaker Corp., South Bend, Ind., to Paul J. Kalman Co.

200 tons for highway work in Scott and Pike counties, Ill., to Laclede Steel Co.

200 tons, building for Ward Baking Co., Youngstown, O., to Truscon Steel Co.

250 tons for Arcade building, Racine, Wis., to Calumet Steel Co.

100 tons for Chesapeake & Ohio railroad in Virginia, to Corrugated Bar Co.

1000 tons for Norfolk terminal to Jones & Laughlin Steel Co., Raymond Concrete Pile Co. general contractor.

200 tons for Hotel Sylvania, Philadelphia, to Concrete Steel Co.

280 tons for Springwells sewage disposal plant, Detroit, to Concrete Steel Co.

300 tons for Viscos Co., Lewiston, Pa., to Concrete Steel Co.

150 tons for boardwalk, Rockaway Park, Long Island, to Concrete Steel Co.

350 tons for garage, Sixth street and Grand avenue, Milwaukee, to Corrugated Bar Co.

100 tons, packing plant at Fresno, Cal., for California Raisin association, to Kyle & Co.

300 tons, Patterson building, Fresno, Cal., to Kyle & Co.

250 tons for building for Penton Publishing Co., Cleveland, to the Bourne-Fuller Co. Hunkin-Conkey Co., general contractors.

160 tons, Pittsburgh building for the National Supply Co., Toledo, O., to the Concrete Steel Co., Pittsburgh.

100 tons, addition to the Gazette Times Publishing Co. building, Pittsburgh, general contract awarded the W. T. Grange Construction Co., that city.

CONTRACTS PENDING

400 tons for headhouse of Union Station, Chicago, bids in.

150 tons for B. & R. Electric building, Kansas City, Mo., bids asked.

200 tons for Main street bridge, Green Bay, Wis., bids asked.

100 tons for Junior high school at Holland, Mich., bids asked.

138 tons, including some shapes, for three highway bridges, Portland, Oreg., bids in.

100 tons, highway work, Riverside, Cal., bids closed June 5.

200 tons, high school, Redwood, Cal., bids closed June 3.

840 tons for Ward Bakery Co. building, Cleveland, bids about to be re-asked. Lundoff-Bicknell Co., general contractors.

Steel Shortage

Continues to Hamper Pipemakers—Good Sales of Cast Made

PIPE PRICES, PAGE 1618 AND 1680

Pittsburgh, June 6.—The shortage of bessemer steel continues to hamper efforts of many pipe sellers, and deliveries of standard merchant steel pipe particularly, are delayed from one to two months. Numerous small orders continue to be placed, however, making a large aggregate but outstanding tonnages for the time being are absent except in connection with one or two line pipe projects of long standing. While a new pipe card announcing a higher price was expected to be put out by the National Tube Co. before this, it has not materialized as yet and may not for a while. In some quarters it is expected that the independents may take the initiative in this regard since present costs are said to make necessary a higher quoting level. Pennsylvania crude oil was advanced 25 cents a barrel to $3.50 yesterday, and this is encouraging to sellers of tubular goods used in oil territories since it undoubtedly will encourage drilling activity. Pipe mill operations continue high, a fair average being 80 per cent.

Atlanta Tonnage Is Placed

New York, June 6.—Trading in cast iron pipe continues active, with practically all sellers in this district sold up over the next three months. A recent outstanding award calls for 9000 tons of miscellaneous cast iron pipe for Atlanta, Ga., the business going to the United States Cast Iron Pipe & Foundry Co. Municipal buying in the immediate district includes 450 tons of 6 to 20-inch for the New York City water department, placed with John Fox & Co. through a general contractor. A feature of present demand is the placing of numerous small tonnages in connection with state road work, especially in New York and New Jersey.

Cast Pipe Price Strong

Chicago, June 6.—With prices firm and tending higher and demand in large tonnages considerably less than earlier in the year, the cast iron pipe market presents something of a contradiction. However, the firmer price is due largely to increased quotations on pig iron and to the fact that many shops are well filled with business and are not seeking more tonnage. On 100 tons on which bids were taken May 31 at Thief River Falls, Minn., the award has not yet been made. On 1000 tons at Herrin, Ill., the National Cast Iron Pipe Co. has been given the business. While some makers continue to quote $45.10, Chicago, others are asking more and quoting $37.50 to $38, Birmingham, the equivalent of $46.60 to $47.10, Chicago.

The National Cast Iron Pipe Co. has booked 1800 tons for Cedar Rapids, Iowa.

High Pressure Advance Stimulates

Birmingham, Ala., June 6.—Lettings of cast iron pipe are not as numerous but the market is still considered firm and plants have much tonnage to produce and deliver. Honolulu has bought 4000 tons of high-pressure pipe from the United States Cast Iron Pipe & Foundry Co. and Paris, Tex., will take 2000 tons. The National and American pipe plants here have many orders in hand as well as the United States Cast Iron Pipe & Foundry Co. Announcement of the advance effective June 1 in high pressure pipe, up to $37 base, brought out a rush of buying toward the last of May. Vessels sailing from the port of Mobile are carrying cast iron pipe to California plants in quantity.

Domestic Ferro

Is Sold in Past Week—Foreign Ratio of Foreign Sales Is Smaller

FERROALLOY PRICES, PAGE 1618

New York, June 6.—Sales of ferromanganese the past week aggregated some 1500 tons, about 1200 of which involved domestic metal and the remainder English. This is an unusual proportion for domestic metal since domestic makers for some time have been restricting their sales to carloads and moderate lots for prompt and nearby shipment. Most of the standard metal in the past week was sold at $67 Baltimore while prompt carloads, both English and domestic, were sold at $70. No sales of German ferro are reported except some moderate business. German ferro continues to be held at $66 Baltimore. At least 2000 tons of ferromanganese inquiry now is pending. Approximately 500 tons of spiegeleisen were sold in the past week at $35 and $36 furnace for 20 per cent metal. This now represents the market price. Prices are tending higher because of the rising coke market.

Several carlots of Swedish ferrochrome containing 6 to 8 per cent car-

n have been sold for importation at ½ cents a pound contained, duty paid, .b. New York; 4 to 6 per cent carbon, ½ cents, New York. French ferrorome has been quoted 11 cents; domestic, nominally 12 cents. Foreign ferrotungsten has been sold at 39 cents pound contained, warehouse and holders of foreign ferrotungsten now re asking 40 cents a pound contained; omestic alloy in warehouse is held at 42½ cents and up. Spot carlots of 50 er cent ferrosilicon are obtainable at 55, delivered; contracts, $57. Some ellers are asking higher prices and a ale of 100 tons of 50 per cent at $60, urnace, is reported. The Andrews Steel Co. has been inquiring for up to 5 tons of ferrovanadium. Small sales of high grade ferrovanadium have been made at $3.70 and $3.75.

Little Buying At Chicago

Chicago, June 6.—Ferromanganese is strong at $75.90 delivered with contract holders pressing for delivery. Spiegeleisen is active at $47 delivered Chicago. Sales are in car lots only.

Spasmodic Buying Continues

Pittsburgh, June 6.—Buying of ferroalloys, mainly ferromanganese, continues of a more or less spasmodic character. Some requirement contracts for ferromanganese recently have been placed. One of these closed this past week with a Mahoning valley steelmaker at $67.50, seaboard, for domestic material, involved 400 tons; another elsewhere, 300 tons. An aggregate of approximately 1000 tons was booked by one domestic producer in addition to recent sales of English material. This last continues at $67.50, c.i.f. Atlantic seaboard. The Carnegie Steel Co.'s price remains $72.50, seaboard. The N. & G. Taylor Co., Cumberland, Md., inquired for a single carload and the Universal Steel Co., Bridgeville, Pa., for a small amount, a fair sized quantity of 50 per cent ferrosilicon and 25,000 pounds of ferrotungsten.

The Crucible Steel Co. of America closed on 200 tons of the 14 to 15 per cent ferrosilicon below the going market, although it inquired for 10 per cent. Another large steel company here is about to close on 300 tons of low grade. From $60 to $62.50, freight allowed, is the quotable market on 50 per cent; some sellers quoting $60, f.o.b. Niagara Falls, N. Y.

Ferrotungsten sellers have inquiries from the West and East for 10,000 pounds and 15,000 pounds, respectively, in addition to the one for 25,000 pounds. From $3.50 to $3.75 is considered a fair spread of quotations. The market is a trifle stronger on ferrochrome. Resale material has practically disappeared and at least one producer in New York state, which for some time accepted business at exceedingly low figures, has increased its minimum. While 11½ cents recently has been done, 12 cents now appears to be the going level on domestic, 4 to 6 per cent carbon.

Inquiries on spiegeleisen are few. The Crucible Steel Co. recently purchased 100 tons. Prices on 16 to 19 per cent and 19 to 21 per cent have been advanced $1 per ton to $35 and $36, f.o.b. furnace, respectively.

Many Records Broken

Birmingham, Ala., June 6.—The open-hearth furnaces of the steel plant of the Tennessee Coal, Iron & Railroad Co., during the month of May produced 99,005 tons of steel, a new high record. The highest previous record was two months before when 96,318 tons was made. The Alice blast furnace in the city proper produced 14,051 tons of pig iron, against 13,152 tons previously while the Ensley No.4 furnace made 16,034 tons against 15,054 tons previously. The Tennessee company's by-product coke ovens produced 444,044 gallons of benzol last month, with 387,926 as the previous high output. Other records were broken last month by the Tennessee company in various departments.

The Nonferrous Metals

Copper and Zinc Especially Strong—Other Metals Also Tend Upward —Brass Changed Again—Tin Jumps

	Copper Electro delivered	Copper Lake delivered	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† aluminum	Spot antimony	†Nickel spot
May 31.....	14.00	14.00	31.75	5.75	5.27½	18.00	5.37½	34.00
June 1.....	14.00	14.00	31.87½	5.75	5.30	18.00	5.37½	34.00
June 2.....	14.00	14.00	32.12½	5.75	5.30	18.00	5.25	34.00
June 5.....	14.00	14.00	32.25	5.75	5.32½	18.00	5.25	34.00
June 6.....	14.00	14.00	32.62½	5.75	5.32½	18.00	5.25	34.00

†Open market quotation.

NEW YORK, June 6.—Nonferrous metal prices touched new high levels for the year the past week, with a fair aggregate tonnage of business placed. The progress of the German loan and reparation negotiations gave more bullish impetus to the market, due to expected increased German copper buying. Domestic consumption of metals has continued to expand. Wire and brass mills are booked up several months ahead and wire mills are operating almost at capacity. The better labor situation in England also holds promise for metals.

Electrolytic copper prices have become firmly established at 14c, delivered, for deliveries through August. May sales of copper are estimated at 200,000 000 pounds, the best month since March, 1920. Casting copper prices advanced to 13.37½c to 13.50c, refinery. Further important Chinese inquiries were in the market, one inquiry involving 2000 tons of casting.

Zinc prices continued the slow but steady advance which has been in progress since February, reaching 5.32½c, East St. Louis, for prime western, by June 5. Galvanizers, die casters, brass mills, electrical manufacturers have been buying to a large total tonnage. High grade zinc prices advanced ⅛ cent to 6.12½c, for carlots, and ¼ cent to 7.25c in less than carlots, delivered.

Lead continued available for June shipment at 5.50c, East St. Louis, through the week, with the New York delivery price nominally 5.75c for June shipment. Producers have been holding the market in check, as they have continued to offer from stock at 5.50c.

Tin has advanced ½ cent since Friday, though Straits tin in London is up only 15 shillings. This sudden action is due to the rise in exchange from around $4.45 to over $4.50, thus sending up the import cost of tin in terms of English prices translated to dollars. The amount of tin going to tin mills continues heavy, but to other uses the tonnage is moderate. Monthly statistics were somewhat of a surprise in that shipments to consumption were larger than expected in relation to world supply, so that stocks were cut. This situation has aided strength.

Brass and copper products have been marked up ¼ cent a pound again. This makes several advances in the past month aggregating more than 1 cent on many items. Seamless tubes were not included in the latest rise. Business in products is increasing and now is of good tonnage, especially in copper wire.

Aluminum has been a little easy of late, but use in the automobile industry still is heavy. Sheet business for other uses also is said to be good.

Mill Products

(Base prices, f.o.b. mill)

SHEETS	
Copper, hot rolled 24 oz., min....	20.50
High brass	16.75
Zinc, ga. 9 to 18 (plates ½c less)	7.50
Lead, full sheets (cut ¼c more).	8.75
SEAMLESS TUBES	
High brass	19.50
Copper	22.25
RODS	
High brass, round, ⅜ to 2½ inch	14.75
Naval brass rod.....	17.25
WIRE	
Copper	15.25 to 15.75
High brass	17.25

Old Metals

(Dealers' Buying Prices)

HEAVY RED BRASS	
Cleveland	9.00 to 9.50
New York	8.50
Chicago	8.50
HEAVY YELLOW BRASS	
New York	5.50
Chicago	6.50
Cleveland	5.50 to 6.00
ZINC	
New York	2.75
Cleveland	3.00
Chicago	2.75
HEAVY COPPER AND WIRE	
Cleveland	10.25 to 10.75
New York	10.75 to 11.00
RED BRASS TURNINGS	
New York	7.25
Cleveland	7.25 to 7.75
Chicago	7.75
YELLOW BRASS TUBING	
Cleveland	5.50 to 6.00
NO. 1 BRASS ROD TURNINGS	
Cleveland	5.50 to 6.00
New York	5.25 to 5.50
Chicago	6.00
ALUMINUM BORINGS	
Cleveland	6.50 to 7.00

Advances Ex-Lake Cut

Commerce Commission Allows 10 Per Cent Lower Freight Within 5 Days of Notice—Upper Lake Railroads Refuse Similar Reduction

WASHINGTON, June 6.—The interstate commerce commission today granted the railroads permission to make a 10 per cent reduction in ex-lake and station to station rates on iron ore in eastern territory, effective on five days notice. This applies to all ore rates in eastern territory except intrastate rates, import rates and few local rates where the reduction since August, 1920, exceeds 10 per cent. The railroads are preparing to file tariffs about June 10 to make the new rates effective about June 15 which will be 15 days in advance of the general reduction July 1. No mention is made so far by the commission of upper lake rates.

Buffalo blast furnace interests had informed the interstate commerce commission they have no objection to making the 10 per cent reduction on ex-lake iron ore effective on a few days' notice provided an emergency exists, but otherwise they are opposed.

May Make 1922 Ore Prices Known Shortly

Cleveland, June 6.—Iron ore prices for 1922 are to be known within a week. This is the concensus of opinion in the trade, following recent developments in the railroad rate situation. The rate tangle has not been straightened out fully to the satisfaction of the shippers, but they are preparing to quote for the benefit of buyers within a few days.

Since the interstate commerce commission ruled in favor of a 10 per cent reduction in rates on ore from lower lake ports to interior furnaces, the furnaces have advised the ore companies to start shipping as soon as the reduction goes in effect.

In the meantime, the lake carriers have reduced their rates about 12½ per cent. The only drawback from the standpoint of the shippers was the fact that the commission did not apply its rate reduction to the upper lake railroads. The shippers pay this rate.

At a meeting in Chicago on Monday when the shippers asked the northern railroad officials to put in effect a 10 per cent reduction, the request was refused. The officials received a telegram from Chairman McChord of the interstate commerce commission in which McChord urged them to make the reduction. The chairman's telegram stated that while the commission's general rate decision technically did not apply to the upper lake rates, nevertheless the increases in those rates in recent years were excessive and justified a reduction at this time.

The shippers will now petition the commerce commission for a formal order to the railroads to put a 10 per cent reduction in effect. They still have a suit pending before the commission to have the rates reduced about 25 per cent. They seek an immediate concession pending the outcome of the suit.

New prices of ore are conjectural, and it is known that a wide difference of opinion exists among the shippers as to what they can afford to quote. Some with long-term contracts specifying a price somewhat below the established market level do not want to make much of a cut. An important factor in the market initmates that it will quote 50 cents less than last year. Six months ago this same interest would have accepted business at $1 off. Several lots of ore, the largest 60,000 tons, are on inquiry.

With ore shipments being held back for the latter part of the season the lake carriers were not required to make much of a reduction in their rates. The new rate from the head of the lakes to lower lake ports is 70 cents, net, instead of 80 cents; from Marquette, 63 cents; from Escanaba, 52½ cents. From Escanaba to South Chicago the rate is 42 cents, net.

The reduction of 10 per cent in ex-lake rates on ore applies to the unloading charges at lower lake ports. From hold to rail the charge is now 12½ cents instead of 14 cents, and from rail to car, it is 7½ cents instead of 8½ cents. The Northern Pacific railroad has increased the dock handling charge at Superior on ore from the Cuyana range from 5 to 7 cents. At Two Harbors and Duluth the charge still remains 5 cents. The Northern Pacific also increased its storage charge after the 10th day at Superior from ¼ cents to 1½ cents.

May shipment of ore from the head of the lakes amounted to 1,585,305 tons, as compared with 2,594,027 tons in May, 1921. Shipments this year to June 1 were 1,721,466 tons, compared with 2,770,238 tons in the same time

Trade Unions Held

Liable for Damages by United States Supreme Court

Washington, June 6.—The unanimous decision of the United States Supreme Court holding that trade unions may be sued and damages recovered for their lawlessness is regarded as one of the most important decisions ever handed down by a court involving organized labor.

The case decided is that of the United Mine Workers of America against the Coronado Coal Co. of Arkansas. The company obtained a verdict of $200,000 against the organization for damages to its property during a strike in 1914. Subsequently this award was trebled and counsel fees of $25,000 and interest amounting to $125,000 added. The United Mine Workers appealed and the Supreme Court remanded the case to the Arkansas district court on the ground that this body did not authorize or support the strike. In the opinion delivered by Chief Justic Taft he made it clear that it was only because the district union, No. 21 did not violate rules of interstate commerce that the case was remanded. "The circum-

The question whether the unions could be sued as organizations was considered at great length by the chief justice, who said in conclusion:

"We think that such organizations are suable in the federal courts for their acts and that funds accumulated to be expended in conducting strikes are subject to execution in suits for acts committed by such unions in strikes.

"Our conclusion as to the suability of the defendants is confirmed in the case at bar by the words of Sections 7 and 8 of the antitrust law. The persons who may be sued under Section 7 include 'corporations and associations existing under or authorized by the laws of either the United States or the law of any of the territories, the laws of any state, or the laws of any foreign country.'

"The language is very broad, and the words, given their natural signification, certainly include labor unions like these.

"As a matter of substantive law all the members of the union engaged in a combination doing unlawful injury are liable to suit and recovery."

Close Last Half Spar

Chicago, June 6.—Inquiries for fluorspar for the last half are numerous, contracted for. Total demand in sight and much tonnage already has been for the last half much exceeds that for the first half. Gravel grades of spar are quoted at from $16 to $17.50

Pacific Business Improves

While Steel Market Notes Only Small Tonnages, Indications Generally Point to Healthier Conditions—Rail Buying Is Active

SAN FRANCISCO, June 2.—Further improvement in general business conditions on the Pacific coast is noted during the past 30 days. Unemployment is on the decrease and many industries are beginning to lay plans for new additions and developments. The metal working plants are in a much healthier condition and the lumber industry is booming along throughout the entire West. In the steel market prices are firming and demand is being well maintained. Deliveries are now the most important concern of consumers and in some instances shipments cannot be made earlier than eight to ten weeks.

Pig Iron and Coke

A better tone is noted in the pig iron market, due primarily to the increased activity among the jobbing foundries. An Oregon interest has purchased 400 tons of Scotch iron running 4.00 in silicon at a price understood to have been $28.75, c.i.f. Portland. The Southern Pacific Co. has an inquiry out for 200 tons of No. 1 and 200 tons of No. 2 southern. It is reported the Southern California Iron & Steel Co. and the Llewellyn Iron Works are in the market for 500 tons each of foundry iron. Some southern interests have withdrawn from the market and the minimum now obtainable is $18, furnace, Birmingham, with $18.50 to $19, furnace, as the general run. Freight, insurance and other charges brings the delivered price up to $30 to $31 a ton which is several dollars higher than that asked for foreign material. The only outstanding coke inquiry in the market at present is one for 1200 tons of foundry for the Southern Pacific Co.

Bars, Plates and Shapes

Merchant bars are in better demand but tonnages involved are still relatively small. No additional open-hearth furnaces have been started, four out of 12 now being in operation. Local mills are now quoting 2.55c f.o.b. San Francisco for merchant material.

Business in bolts and nuts is improving remarkably and while orders are small, the total volume is large. Both large and small machine bolts are now being quoted at 65 and 5 off, while small machine bolts, rolled cut, are going at 65, 10 and 5 off. Small rivets are quoted at 70-10-10 off and prices on boiler and structural rivets are 2.35c and 2.25c, respectively.

Hoop and band business is in better volume. Prices are firm at 2.25c, base Pittsburgh, on both bands and hoops, and in some cases 2.40c base is being obtained.

Plates are in fair demand and several good sized tonnages are before the trade. Action is expected to be taken within 10 days on a pipe line in Los Angeles in which 1000 tons of flanged material is involved. The Puget Sound Machinery Depot, Seattle, was awarded the penstock job for the Gorge plant of the Skagit river development in which 700 tons are involved. No action has been taken yet on the 90 small tanks for the Standard Oil Co. Bids will be opened June 6 by the city of Walla Walla, Wash., for an additional 4 miles of 20-inch fabricated pipe about 300 tons being involved.

Other Finished Material

It is reported an interest in the southern part of the state closed for 380 tons of corrugated galvanized sheets this week at 4.15c, base Pittsburgh. The navy is inquiring for about 200 tons of galvanized sheets.

The Alaska Engineering commission, Seattle, will open bids June 2 for 1100 tons of 70-pound T rails, 50,000 tie plates, 600 kegs of track spikes and some miscellaneous material.

Demand for all forms of tubular goods is heavy and many mills are accepting business only from old customers. Deliveries, in many cases, cannot be made inside of eight to ten weeks. Oil field operations reported for the week ending May 27, show 28 new wells started as compared with 38 during the previous week. Total new wells this year to date is 550, as compared with 629 last year.

Warehouse Market

Jobbers report the movement from warehouse during May will exceed April by 25 per cent. Demand is good, with pipe and galvanized sheets most active. Local prices on large machine bolts have advanced from 45 off to 40 and 5 off. Several changes have been made in the prices in Los Angeles, as follows: Bands from 4.00c to 4.15c; nails, bright, from 4.25c to 4.10c; boiler rivets from 4.60c to 4.40c; structural rivets from 4.50c to 4.30c; large machine bolts from 55 off to 40 and 5 off and small machine bolts from 60 off to 50 off.

Scrap Consumers Sold Up

(*Continued from Page* 1624)

come effective. These rates will admit of profitable shipment here from southern points and reshipment to eastern destinations. The Colorado Fuel & Iron Co. has enlarged its purchases in Kansas, Texas and Nebraska points, paving prices about equal to the Chicago basis.

Some Advances Made

Philadelphia, June 6.—One eastern Pennsylvania maker advanced its price on bundled sheets and turnings in the past week to $13.50 delivered and while it obtained some tonnages this figure now seems the market minimum as $14 was paid for these grades. The scrap market is strong but not fully tested as there has not been much business in the past week.

Pittsburgh Market Dormant

Pittsburgh, June 6.—The local scrap market continues more or less dormant. Bids on recent railroad scrap offerings have been particularly strong in the Mahoning valley district, dealers there taking practically all the scrap on the Pennsylvania railroad's central region list, and it is reported that the eastern region material went to that territory also. Bids were as high as $18.25 on the heavy melting steel whereas local buyers have pegged that grade at $17.50. With dealers paying $17, the market is quotable at $17 to $17.50, where it has been for several weeks past. So far local buyers have always been able to pick up what tonnages they require at the maximum figure prevailing at the time. A large independent steel maker figured in this market recently to the extent of 30,000 to 35,000 tons. If it is true that the eastern region Pennsylvania railroad scrap went to the Youngstown territory, it introduces a situation almost unparalleled. Hitherto the Pittsburgh market has always been sufficiently strong to stop eastern material from going further west; this time the anxiety of Youngstown dealers to accumulate yard stocks or to obtain material to apply on shorts, or else their firm faith in an advancing market, caused them to bid high for almost 50,000 tons of assorted material. Local and nearby steel companies are out of the market for the time being. Rejections have been numerous during recent weeks. The Brackenridge, Pa. consumer will not pay more than $13.75 for machine shop turnings. Blast furnace grades continue firm.

Steel Works in Market

Buffalo, June 6.—The market for scrap iron and steel is active with a steady purchasing by most of the steel works. Strict inspection is being given incoming shipments and an unusual number of rejections has resulted. Dealers are apparently through playing the waiting game not holding tonnage.

Cincinnati Prices Higher

Cincinnati, June 6.—The iron and steel scrap market is strong and prices are higher ranging from 50 cents to $1 a ton all along the line. In revising schedules dealers marked up practically all grades of iron foundry remelting material $1. With the exception of heavy melting bundle sheets and iron axles which were advanced 50 cents, the steel grades are quoted $1 higher.

Further Improvement in South

Birmingham, Ala., June 6.—Scrap iron and steel dealers in the Birmingham district notice further improvement in the market. Quotations show some advances for the week and a little better demand for various grades is shown. Foundries using scrap are operating on almost full time.

Blast Furnaces Are Buying

New York, June 6.—Buying of borings and turnings by blast furnaces in this district continues active, with prices unchanged but strong. Cast scrap is also moving freely, due to buying by several New Jersey foundries. All other grades, however, are in only fair demand, and in the case of railroad steel, prices have been reduced 50 cents to a range of $11.50 to $12, f.o.b. New York.

British Trades Settle Lockout

All Workers Except Boilermakers and Machinists Vote by Majority of 52,000 To Accept Employers' Terms—Engineers' Union Taking New Ballot—Pig Iron Stronger—German Prices Again Advanced

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-3 Caxton House, Westminster, S. W.1

LONDON, June 5.—The British lockout has been settled by all unions, except boilermakers, foundrymen and machinists, in voting by a majority of 52,000 to accept the employers' demands. The Amalgamated Engineers' union is taking a new ballot. With the complete resumption of operations expected soon the market for pig iron is stronger. Meanwhile, the center of activities has been transferred to the continent where improvement in the French market except for pig iron has become more pronounced. One Lorraine mill re-

Sterling—$4.50

cently booked 10,000 tons of semifinished material for Germany. Two thirds of the blast furnaces in the Saar district are in operation. Steel production in France in April was nearly double that in April 1921. French pig iron is plentiful resulting in low export prices. Foundry iron has been sold to Italy at 186 francs ($17) per ton, furnace.

The Germans again have been required to increase wages of unskilled workers, to 35 marks ($0.13) per hour, while the German freight rates were advanced another 25 per cent June 1. These changes have resulted in higher prices. Hematite iron is now 6724 marks per ton ($24.21); foundry iron, 6136 marks ($22.09); bessemer iron, 6300 marks ($22.68); billets, 9415 marks ($33.89); sheet bars, 8970 marks ($32.29); wire rods, 8770 marks ($31.57); rails, 11,600 marks ($41.76); bars, 10,410 marks ($37.48); shapes, 10,135 marks ($37.26) and ship plates, 11,600 marks ($41.76).

British tin plate prices are 3 pence higher, now being quoted at 19 shillings 6 pence ($4.39). Indian and Far Eastern orders have improved.

Engineering Plants Closing; Less Demand for Iron

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

BIRMINGHAM, Eng., May 25.—The failure of negotiations for the settlement of the lockout in the engineering trades has intensified the feeling of depression. Many large companies have decided to shut down their works. The effect of this attitude has been experienced immediately by makers of pig iron. Those in the Midlands have practically no inquiry and are stocking their iron to a larger extent than in months. The Midlands cannot benefit except indirectly from the American demand for pig iron because of the cost of railway transportation to the shipping port which approximates 12 shilling ($2.65) per ton. One large firm had an inquiry for no less than 10,000 tons but the price quoted did not lead to business.

The slight reduction in cost of manufacture due to the lowering of freight rates is not considered in selling prices. It will not bring into operation a single furnace, according to the general opinion in the trade.

Prices are easier, mixed numbers being obtainable at £4 15s ($21.13) a reduction of about 1 shilling ($0.22) per ton. The comparative steadiness of prices gives practical evidence of the trifling character of the recent reduction in railway rates. The slight fall in pig iron is clearly due to weakening demand. The same condition is found in the Midlands where all brands of pig iron have fallen in value 1 shilling to 2 shillings 6 pence ($0.55).

Export business is well maintained, inquiries continuing to flow in from France, Germany, Belgium and else-

Sterling—$4.45

where. Few blast furnaces are operating in Cleveland, and it is possible to dispose of the small output from that district. Stocks are being reduced so far as No. 3 G. M. B. is concerned. Some hematite is available, owing to the fact that few steelworks are operating on the Northeast coast. While there is no new business in ore, importations have been unusually large on old contracts, the amount received on Tees side up to May 15 being 126,781 tons.

Barrow-in-Furness, like Cleveland, manages to sell its pig iron, notwithstanding the paralyzing effect of the engineering dispute in that district. The 12 furnaces making pig iron on the West Coast are doing a fair foreign trade, while sending some consignments to the Midlands and South Wales. The steelworks in the Barrow and Workington district appear to be busier than those elsewhere, chiefly on railway material for India and there are encouraging sales to France, Belgium and Italy. Scotland is greatly hampered by the engineering lockout and is a poor customer. Among recent developments in the Barrow district is the construction of a deep-water dock at Workington, which will be helpful in competition with the East Coast.

The general position of the iron trade is shown by the fact that on May 19 112 furnaces were in blast as compared with 330 in June 1918. The total number of furnaces in Great Britain is 486, but the figure for 1918 suggests that the workable number may safely be estimated at about 400. Several furnaces have been blown out since May 19. The finished iron and steel trade shows no sign of improvement with the possible exception of a slight demand from the shipbuilding yards which have resumed work. A large amount of locomotive work and bridge building is held up in the Glasgow district awaiting a settlement of the engineering dispute. A Darlington firm has secured an order for 14,000 tons of steel piping from the city of Calcutta.

Except two or three favored firms, it is unusual for steelworks to operate more than half time. The market will benefit a little from railway rate reductions as Birmingham merchants will save 3 shillings ($0.66) to 4 shillings ($0.89) per ton in consignments to the seaboard.

Some notable offers from the Continent appear to confirm the expectation of competition. A well known Charleroi firm has approached a large concern of constructional engineers explaining that a reduction in railway rates has enabled it to revise its offers. The firm quotes steel bars delivered in Birmingham at £9 6s ($41.38). This is not much under the English price. Other quotations may lead to business. The firm is prepared to sell joists at £8 14s 6d ($38.81) against the British price of £10 10s ($46.72); channels, £9 4s 6d ($41.05) against £10 5s ($45.61); angles, £9 6s ($41.50) against £10 ($44.50) and plates 3/16ths, £9 16s ($43.60) compared with £11 5s ($50.06). Steel hoops

Current Iron and Steel Prices of Europe

British Market

Home Market Prices. Gross Tons at Works or Furnace or F.o.b.

Corrected to Date by Cable

	$	£ s d
SEMIFINISHED STEEL		
Billets, soft steel	32.06	7 2 6
Sheet bars	32.06	7 2 6
Wire rods	43.00	9 10 0
FINISHED STEEL		
Steel bars, England, 5/8 to 3-inch	40.50	9 0 0
Steel bars, England, 5/8 to 3-inch, for export	38.50	8 10 0
Plates, ship, bridge and tank, England	43.00	9 10 0
Plates, ship, bridge and tank, England, for export	40.50	9 0 0
Plates, ship, bridge and tank, Scotland	43.00	9 10 0
Plates, ship, bridge and tank, Scotland, for export	38.50	8 10 0
Beams, England	43.00	9 10 0
Beams, England, for export	38.50	8 10 0
Beams, Scotland	43.00	9 10 0
Beams, Scotland, for export	38.50	8 10 0
Sheets, black, 24 gage	47.81	10 12 6
Sheets, galvanized, 24 gage	70.88	15 15 0
Rails, 60 lbs. and over	36.00	8 0 3
Rails, 60 lbs. and over, for export	33.75	7 10 0
Tin plate, base box, 108 lbs.	4.39	0 19 6
Steel hoops	49.50	11 0 0
Steel hoops, for export	46.13	10 5 0
PIG IRON		
Hematite, East Coast, Mixed Numbers	21.38	4 15 0
Hematite, West Coast, Mixed Numbers	22.16	4 18 6
Basic, Middlesbrough	18.00	4 0 0
No. 3 Foundry, Middlesbrough	20.25	4 10 0
No. 3 Foundry, Derby, Leicester, Nottingham	18.56	4 2 6
No. 3 Foundry, Northamptonshire	17.44	3 17 6
No. 3 Foundry, Staffordshire	18.56	4 2 6
No. 3 Foundry, Scotch	20.81	4 12 6
Ferromanganese, 76 to 80 per cent	67.50	15 0 0
Ferromanganese, 76 to 80 per cent, for export	64.13	14 5 0
COKE		
Yorkshire furnace	4.28	0 19 0
Yorkshire foundry	6.75	1 10 0

Where no separate export prices are given, same quotations apply to domestic and foreign business.

German Market

Prices Last Reported

	$	Marks per metric ton
PIG IRON		
Hematite, Oberhausen	24.21	6724
Foundry, No. 3, Oberhausen	22.09	6136
Bessemer Stahleisen, Siegen	22.68	6300
COKE		
Ruhr furnace	4.71	1308
Ruhr foundry	4.88	1355
SEMIFINISHED STEEL		
Billets	33.89	9415
Sheet bars	32.29	8970
Wire rods	31.57	8770
FINISHED STEEL		
Standard rails	41.76	11,600
Merchant bars	37.48	10,410
Structural shapes	37.26	10,135
Ship plates	41.76	11,600
Medium plates, 3 to 5 millimeters	45.09	12,525
Sheets, below 3 millimeters	47.66	13,240
Tin plate	100.80	28,000
Plain wire	36.00	10,000
Bands and strips	39.49	10,970

All prices are f.o.b. furnace or mill.

French Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Hematite, Lorraine	27.42	300
Basic Bessemer, Lorraine	21.02	230
Foundry, Longwy, No. 3, sand-cast	20.57	225
Foundry, Longwy, No. 3, chill-cast	20.57	225
Ferromanganese, 76 to 80 per cent	90.49	990
COKE		
French furnace	9.32	102
German furnace, f.o.b. frontier	8.23	90
French foundry	11.88	130
SEMIFINISHED STEEL		
Blooms	29.25	320
Billets	31.08	340
Sheet bars	33.82	370
FINISHED STEEL		
Standard rails	50.27	550
Merchant bars	39.30	430
Angles	43.42	475
Normal beams and profiles	43.42	475
Plates, ship and tank, 10 millimeters and thicker	53.93	590
Plates, bridge and tank, 5 to 10 millimeters	58.50	640
Sheets, black, 3 millimeters	65.81	720
Sheets, blue annealed, 2 millimeters	82.26	900
Shafting, cold-drawn, 40 to 60 millimeters	77.69	850
Bars, 2 per cent nickel steel	100.54	1100

All prices are f.o.b. furnace or works.

Belgian Market

Prices Last Reported

	$	Francs per metric ton (2205 lbs.)
PIG IRON		
Basic bessemer, Belgian	19.01	225
Basic open-hearth, Belgian	20.28	240
Gray forge, Belgian	18.17	215
Foundry, No. 3, Belgian	19.86	235
Foundry, No. 3, Luxemburg	20.28	240
Foundry, No. 3, Lorraine	20.28	240
SEMIFINISHED STEEL		
Blooms	26.20	310
Billets	27.46	325
Sheet bars	28.31	335
Wire rods	39.72	470
FINISHED MATERIAL		
Standard rails	33.38	395
Merchant bars	33.80	400
Normal beams and profiles	32.11	380
Plates, 5 millimeters and thicker	39.29	465
Sheets, black, 3 millimeters	41.98	485
Sheets, galvanized, 1 millimeter	107.74	1275
Plain wire	50.70	600
Galvanized wire	67.60	800
Wire nails	37.60	445

All prices are f.o.b. furnace or works.

rather close, the British quotation being £10 14s ($47.61) against £11 ($48.95). From another firm comes an offer of joists at £7 10s ($33.37) Antwerp.

A novel feature has been introduced, the Belgian exporters inviting payment on a 30 days draft, subject to an extra charge of 1 shilling ($0.22) per ton. This is quite a new thing in Belgian business, a great point always having been made of the system of cash on bill of lading. It is not likely that the offer will turn the scale in favor of Belgium as buyers of billets here usually are in a fairly strong financial position. But the delayed payment might have an important effect as a useful weapon in the hands of consumers in the event of a controversy arising as to the quality of the goods delivered. At present the Englishman hands over his money before he has an opportunity of seeing or testing the steel, and this has imposed a great barrier in the way of business.

Welsh tin plate production continues at about 70 per cent of capacity. There have been recent sales to Germany, three steamers loading in the week of May 15 for Hamburg. During the war the Canadian market was practically lost to American competition, but this business is gradually being recovered. Progress also has been made in sales to South America, while the business done with the Far East is very promising. Makers express themselves as satisfied with their prospects in the international market, prices being well down to a working basis. The amount exported in April was 36,055 tons as against 13,667 tons in April 1921.

The galvanized sheet trade does not show a similar recovery, although Glasgow reports a fair export inquiry for black steel sheets and galvanized sheets.

Bethlehem Contracts for African Manganese

London, May 25.—Some interesting facts regarding the manganese ore business are stated in the annual report of the Fanti Consolidated Mines Ltd., of London and Seccondee, Gold Coast of Africa.

After reporting a profit of £34,960 12s 6d ($154,000) on the year's operations, it is stated that the earnings would have been more favorable if a contract for 500,000 tons of ore which was made last year had not been cancelled. This contract called for the shipment of 100,000 tons per year for five years with a guaranteed minimum profit of 7 shil-

lings 6 pence ($1.66) per ton.

Since the cancellation of this contract, however, the company has proceeded with the development of its property which is said to be the only operating manganese ore property on the East Coast of Africa. The developments make possible an average production of 70,000 to 100,000 tons of ore per year it is understood.

The ore is said to contain 50 to 53 per cent manganese, 2 to 4 per cent iron, 3 to 7 per cent silica, and between 0.10 to 0.12 per cent phosphorus.

The report states that the company has contracted to ship ore to the Bethlehem Steel Co. The distance from Seccondee to Philadelphia is 4650 miles, compared with 8224 from Bombay, 4703 from Rio de Janeiro, and 5747 from Batum.

Germans Acquire Austrian Car Works

European Special Correspondence

Austrian Crown—$0.000118

VIENNA, Austria, May 22.—An agreement is said to have been made between the soviet government of Russia and the Skoda works, in which the French Schneider company is interested, to resume operations in the agricultural implement plant at Odessa. Nominally the title to the plant, which was nationalized, will remain with the soviet government although the Skoda works, under the agreement, it is said, will have a free hand in the management and sales policies.

Prices show a downward tendency in Czecho-Slovakia. For local delivery actual prices are now 2750 crowns ($52.25) per metric ton for bars; 3250 crowns ($61.75) for bands; 3800 crowns ($72.40) for black sheets below 1 millimeter; and 3700 crowns ($70.30) for sheets 1 to 3 millimeters. The railway car and locomotive builders are trying to bring about wage reductions of 10 per cent. At the Freistadt steel works, it is said that recently the loss on each 12-ton freight car constructed has been 2100 crowns, or $40. The Czech production of graphite in 1921 amounted to 8500 tons, or about 25 per cent of prewar production figures recently complied show.

In Austria business is improving and pig iron production is now at the rate of 230,000 and steel production 300,000 metric tons per year. This is not sufficient and foundry pig iron is being imported from Czecho-Slovakia. Hungarian competition is making itself noticed in the sheet trade.

Bars now quoted 303,000 Austrian crowns per metric ton ($35.75) compared with recent quotations of 280,000 crowns. Heavy sheets are 300,000 crowns ($35.40) per ton and pig iron of foundry grades is 116,000 crowns ($13.68) while billets are 162,000 crowns ($19.11) f.o.b. works. Building activity has resulted in improved demand for structural material.

Czech Crown—$0.019

The revised figures of Austrian foreign trade last year show that magnesite exports were 80,000 tons and iron ore exports 79,000 tons, with machinery exports at 54,000 tons.

The Graz railway car building factory in Austria is said to have been secured by German interests affiliated with Hugo Stinnes, and it is announced that it will be used for the manufacture of rolling stock for Russia.

The Polish market is fairly settled, bars being quoted at 140,000 Polish marks ($35.00) per metric ton; hot-rolled bands 175,000 marks ($43.75); cold-rolled bands 240,000 marks ($60.00); flat billets 155,000 marks ($38.75); and wire 180,000 marks ($45.00).

Canadian Sheet Sales Largest in Year

Special Correspondence

TORONTO, Ont., June 5.—While the price of pig iron remains strong in the Canadian market business has shown practically no change during the last two or three weeks. Melters continue to buy foundry and malleable iron for prompt delivery. Future buying is limited, although it is expected when furnace companies open their books for third quarter many consumers will be ready to cover for that period. While it does not appear that a shortage of iron will be caused by lack of fuel, melters are showing more readiness to buy for future needs than they have at any time during the past year or two. No. 1 (2.25 to 2.75 silicon) and malleable are quoted at $29.15 and No. 2, (1.75 to 2.25 silicon) at $28.15, Toronto. Montreal prices are: No. 1 and malleable, $31.80, and No. 2, $30.80.

A strong demand continues for finished iron and steel. Building and bridge construction is active and structural shapes are moving in a fairly brisk manner. J. P. Veniot, minister of public works, New Brunswick, states that about $500,000 will be spent on bridges throughout the provinces during the present year. Shapes and beams are strong, and are quoted at 2.30c, Toronto.

Local representatives of steel plants say that they are closing considerable business in bars for spot and future delivery. Bars are quoted at 2.30c, Toronto. They are quoted at 2.20c, Toronto. No.28 black sheets are quoted at 4.00c, and galvanized at 5.10c.

Mills are entering the market more frequently and for larger tonnages of scrap. Foundries are also buying more freely. Dealers continue to offer $8 per gross ton for heavy melting steel and $3 per gross ton for turnings, delivered, Hamilton; $16 for steel and wrought iron axles; $18 for borings, delivered, Toronto. No. 1 machinery cast is being purchased at $16 per net ton, and stove plate at $12, Toronto.

German Exports Increase Over February

London, May 25.—German exports of iron and steel products were increased in March compared with February, but not up to the January level. The total exports in March were 211,979 metric tons, compared with 172,709 tons in February and 221,743 tons in January. The total for the first quarter is 606,431 metric tons. This is at the rate of 2,425,000 tons a year.

Great Britain has held the lead each month and its total for the first quarter is 772,500 gross tons, compared with 596,300 gross tons exported from Germany and 495,629 gross tons from the United States. But it should be noted that whereas in January the United States was third in export trade, in March Great Britain's shipments were about the same as those from Germany, although still less than those from England. The exports of each country for the three months, with Germany's figures converted to gross tons are as follows:

	United States	Great Britain	Germany
January	155,822	253,300	218,200
February	133,333	223,400	170,000
March	206,474	295,800	208,100
Total	495,629	772,500	596,300

Imports in March also were higher, reflecting the heavy purchases of scrap, pig iron and rolled products now being made in France and England. The total imports in March were 125,158 metric tons, compared with 81,878 tons in February and 100,907 tons in January, these figures including scrap. The total imports for the first quarter were 307,943 metric tons.

Among the principal items imported in March were 18,652 metric tons of pig iron; 17,756 tons of scrap; 9966 tons of semifinished steel; 48,545 tons of bars, 4094 tons of plates and 4621 tons of rails.

May Pig Iron Increases Sharply

Output Shows Gain of Almost 240,000 Tons—Steelworks Furnaces Continue To Show Improved Operations—Active Stacks on May 31 Total 175, Making a Net Gain of 14 Stacks Over April

EMPHASIZING the small effect of the coal strike on coke oven operation, production of coke and anthracite pig iron in May made a gain of nearly 240,000 tons over April. Of this amount about one-fourth may be assigned to the one-day longer month of May, the balance being attributed to the increased activity of blast furnaces. During the month the net gain was 14 furnaces as compared with six during the previous month. Several other furnaces will be blown in June. The total iron output for the month was 2,309,348 gross tons, the actual gain being 239,187 tons

MONTHLY PRODUCTION

	1922	1921	1920
January	1,645,804	2,414,753	3,012,373
February	1,630,180	1,929,394	2,984,257
March	2,035,908	1,594,866	3,375,768
April	2,070,161	1,190,751	2,752,670
May	2,309,348	1,215,272	2,991,825
June	.....	1,064,007	3,046,623
Total 1st half..	9,691,401	9,409,043	18,163,516
July	.....	864,642	3,043,918
August	.....	954,901	3,145,536
September	.....	985,795	3,124,308
October	.....	1,234,450	3,288,341
November	.....	1,414,958	2,935,081
December	.....	1,642,775	2,700,268
Total 2nd half..	.....	7,097,521	18,237,452
Grand total...	9,691,401	16,506,564	36,400,968

as compared with the 2,070,161 tons of the preceding month. This output stands as the highest since January, 1921.

Merchant pig iron in May aggregated 410,404 tons, which compared with 375,814 tons in April, was an increase of 34,590 tons. Reduced to an average daily basis this output represented 13,239 tons per day, or 712 tons per day better than the 12,527-ton rate of the previous month. Nonmerchant and steelworks furnaces made 1,898,944 tons as against 1,694,347 tons in April, a gain of 204,597 tons. On an average daily basis, the steelworks production was at the rate of 61,256 tons per day as compared with 56,478 tons per day in April, an improvement of 4778 tons.

The output of both merchant and nonmerchant iron in May was at the rate of 74,495 tons per day. This was a gain of 5490 tons over the 69,005 tons of the preceding month and was also the highest since January, 1921.

Furnaces operating on the last day of May totaled 175 as against 161 on the last day of April and 155 on the last day of March. This number stands second to that of January, 1921 when 184 furnaces were active. The increase of 14 stacks compares with a gain of six during April and 16 during March. Nine merchant furnaces were blown in during

AVERAGE DAILY PRODUCTION

	1922	1921	1920	1919	1918
Jan.	53,090	77,895	97,172	106,654	77,523
Feb.	58,220	68,906	102,904	105,270	82,794
Mar.	65,674	51,447	108,895	99,614	103,548
Apl.	69,005	39,691	91,754	82,479	109,112
May	74,495	39,202	96,510	67,991	111,351
June	.....	35,466	101,533	70,467	110,538
July	.....	27,892	98,190	78,200	109,954
Aug.	.....	30,802	101,468	88,453	108,983
Sept.	.....	32,857	104,143	82,692	113,774
Oct.	.....	39,821	106,075	60,142	112,335
Nov.	.....	47,165	87,836	80,244	111,595
Dec.	.....	52,992	87,105	84,711	110,602
Ave.	64,181	45,223	99,456	83,910	105,290

the month and four blown out, the net gain being five furnaces. Of the nonmerchant class 13 were blown in and four blown out with a net gain of nine furnaces, the gain being 14 furnaces.

Of the total number of stacks operating on the last day of the month 42 were merchant and 133 were nonmerchant. On May 31 the Steel corporation was operating 74 furnaces as compared with 68 on April 30 and 70 March 31.

Ferromanganese in May totaled 15,432 tons, a gain of 434 tons over the 14,998 tons of April. Spiegeleisen with 4902 tons gained 691 tons over the 4211 tons of the month before.

Furnaces blown in during the month were: In Ohio: River Nos. 2 and 3, McKinney Steel Co.; two Mingo, Carnegie Steel Co.; Youngstown "A," Youngstown Sheet & Tube Co.; Cleveland No. 1, Otis Steel Co. In Pennsylvania: One Isabella and one Farrell, Carnegie Steel Co.; Shenango No. 3, Shenango Furnace Co. In New York: Harriet "X," Wickwire-Spencer Steel Corp.; Susquehanna No. 4, Rogers Brown Iron Co. In New Jersey: Wharton "A" Replogle Steel Co. In Maryland: Maryland "E" and "F" Bethlehem Steel Co. In Tennessee: Rockwood, Roane Iron Co. In Alabama: City No. 1 North Birmingham No. 4, Sloss-Sheffield Steel & Iron Co. In Kentucky: Norton, Norton Iron Works. In Illinois: One Iroquois, Steel & Tube Co. of America. In Indiana, Gary No. 10, Illinois Steel Co.; Madeline No. 2, Inland Steel Co. In Minnesota: Duluth No. 1, Minnesota Steel Co.

Stacks blown out during the month were: In Ohio: Upson, Upson Nut Co. In Pennsylvania: Aliquippa No. 5, Jones & Laughlin Steel Co.; Monesson No. 1, Pittsburgh Steel Co. In New York: Harriet "Y," Wickwire-Spencer Steel Corp. In New Jersey: Oxford, Empire Steel & Iron Co. In Tennessee: Rockdale, J. J. Gray Jr. In Alabama: Tuscaloosa, Central Iron & Coal Co. In Indiana, Madeline No. 3, Inland Steel Co.

DIVISIONS OF PRODUCTION

1921	Merchant	Non merchant	Spiegel	Ferromanganese	Other ferro
Jan.	474,135	1,940,618	2,542	20,960	4,950
Feb.	338,383	1,591,011	11,566	17,447	4,067
Mar.	276,559	1,318,307	19,746	17,682	3,222
Apl.	238,539	952,212	14,744	13,266	3,163
May	215,703	999,569	2,379	6,853	4,553
June	178,854	885,153	....	4,536	6,090
July	141,326	723,316	4,015	1,509	3,178
Aug.	134,491	820,410	....	3,878	....
Sept.	157,728	828,067	....	3,289	35
Oct.	218,990	1,015,460	....	3,902	990
Nov.	304,535	1,110,423	....	3,525	1,065
Dec.	372,000	1,270,775	....	3,847	1,064
Tot'l	3,051,243	13,455,321	55,042	100,694	32,377
1922					
Jan.	388,322	1,257,482	1,230	5,644	825
Feb.	355,455	1,274,725	4,930	3,618	872
Mar.	390,643	1,645,265	2,095	11,604	1,102
Apl.	375,814	1,694,347	4,211	14,998	828
May	410,404	1,898,944	4,902	15,432	405

MAY PIG IRON

	No. of stacks	No. in blast last day of month May	April	Total tonnage made—Merchant	Nonmerchant	Totals—May	April
Pennsylvania	159	66	65	77,038	720,662	797,700	743,681
Ohio	80	35	30	75,664	437,036	512,700	445,920
Alabama	43	19	18	113,970	82,096	196,066	171,618
Virginia	19	..	..	.....	.....	.....	.....
New York	26	11	10	48,401	101,740	150,141	132,712
New Jersey	4	1	1	5,491	145	5,636	4,815
Illinois	26	15	14	53,403	202,072	255,475	238,677
Colorado	5	3	3				
Indiana	16	12	11	11,860	279,246	291,106	245,690
Maryland	6	4	2				
Wisconsin	6	1	1				
Kentucky	7	2	1				
West Virginia	5	2	2	3,213	37,009	40,222	39,631
Tennessee	14	1	1				
Washington	1	..	..				
Georgia	2	..	..				
Texas	1	..	..				
Minnesota	3	1	..	13,832	25,731	39,563	27,328
Michigan	3	2	2				
Missouri	1	..	..				
Spiegel and ferro—all states..	..	..	..	7,532	13,207	20,739	20,037
Totals	427	175	161	410,404	1,898,944	2,309,348	2,070,161

Foundry Meet Reflects Upturn

Spirit of Optimism Is Seen in Activities of American Foundrymen's Association at Rochester — Exhibits Show Advance in Design of Equipment — International Session Brings Out Discussion on Gray Iron Practice

ONE hurried tour of inspection of Exposition Park, Rochester, N. Y., where the convention and exhibit of the American Foundrymen's association opened Monday, is sufficient to convince even the most conservative observer that the foundry industry is rapidly emerging from under the cloud of business depression. Not only is the attendance far above expectations, but the exhibits of foundry and machine shop equipment and supplies compare favorably with those of any previous show. Unusual interest in the extensive technical program is being shown, the attendance at the international technical session Tuesday morning indicating that a new record for the number of foundrymen participating in the presentation of papers and discussion of casting problems may be established before the meeting closes. For apparent enthusiasm of those in attendance, variety and excellence of exhibits in the foundry show, and diversity and timeliness of papers on the technical program the twenty-sixth meeting promises to stand high in a comparison with previous conventions. In the opinion of those who have attended many meetings of the association, the events of the first two days foretell a successful week.

The activities of the association during the week are centered in the municipally-owned Exposition Park, where a group of five adjacent buildings provides excellent facilities for housing the exhibits and for holding the technical meetings.

The convention actually began at 10 a. m. Monday, when the doors of the exhibition hall were thrown open and registration desks were ready for visiting foundrymen. The first session, held Monday afternoon, was devoted to the formalities of officially opening the convention. The Tuesday morning session, termed "International" because of the character of the technical papers presented, was devoted largely to a discussion of gray iron foundry problems by British, French, Belgian and American authorities.

The program for the remainder of the week includes sessions on steel, brass, aluminum, gray iron and malleable foundry practice, and on molding sand research and industrial relations. The Institute of Metals division of the American Institute of Mining and Metallurgical Engineers is holding its convention concurrently with that of the American Foundrymen's association, a complete program having been worked out.

Meeting Assumes International Character

DEPARTING somewhat from precedent, the opening session of the twenty-sixth convention of the association was devoted entirely to the transaction of routine business. C. R. Messinger, Sivyer Steel Castings Co., Milwaukee and vice president of the association and W. B. Price, American Brass Co., Waterbury, Conn., and chairman of the Institute of Mining and Metallurgical Engineers, presided jointly. A resolution was adopted expressing regret at the absence of President W. R. Bean, Eastern Malleable Iron Co., Naugatuck, Conn., who was unable to attend the convention due to illness. Other business transacted at this session included the appointment of tellers of election, selection of resolutions and awards committees. A number of announcements was made. The secretary of the mayor of Rochester and Andrew C. Gleason, Gleason Works, Rochester welcomed the visitors to the city.

As a result of the closer relations between European and American foundrymen brought about by the world war, and through the efforts of members of the various foundrymen's associations who have visited on opposite sides of the Atlantic, a plan for the exchange of tecnical papers between American and European associations has been successfully adopted. The first exchange paper with the Institution of British Foundrymen was that prepared by George K. Elliott, Lunkenheimer Co., Cincinnati, for presentation at the 1921 meeting of the institute. The second exchange paper, written by F. J. Cook, Rudge-Littley, Ltd., Birmingham, Eng., former president of the Institution of British Foundrymen, was presented by Mr. Cook Tuesday morning. It was in order that the proper setting would be given this important paper that the papers committee arranged a group of Belgian, French, British and American papers and termed the meeting an "international" session.

Distinguished Visitors Present

The assembly was distinguished by the presence of representatives of foundry organizations of France, Belgium and England. M. Remy of Herstal, Belgium, presented a greeting from the Foundrymen's association of Liege, Raymond Gally from the Foundrymen's Technical association of France and F. J. Cook read a cabled message from Oliver W. Stubbs, president of the Institution of British Foundrymen. A. O. Backert, Penton Publishing Co., Cleveland, presiding at the session, expressed the appreciation of American foundrymen for the good will and spirit of cooperation manifested by presence of the visitors from abroad and as a result of a motion unanimously adopted appointed a committee to convey by cable the gratitude and appreciation of the American Foundrymen's association to the European organizations.

Mr. Cook begins his paper with the statement that the average British foundryman believes that American gray irons are inferior to those of similar class made in Great Britain, and proceeds to explain that this belief is the outgrowth of accumulative evidence, some of which he presents in the paper.

In testing American and British irons for comparison, one is faced by difficulties on account of differences in practice in the two countries. Americans place less dependence on tensile tests than their British cousins. The author's data show that seemingly representative British irons have a higher average tensile strength than American irons. American foundry literature, he says, conveys the impression that a tensile strength exceeding 31,360 pounds is worthy of special notice. The average tensile strength of all bars tested by the author over a period of 500 consecutive working days was 36,290 pounds. No test was as low as 30,240 pounds and the greatest strength was 43,008 pounds. The superiority of Bri

h irons is again claimed by reference comparative tests on Keep's machine. Allowable percentages of chemical ements for various classes of gray iron iffer in the two countries. The author elieves American foundrymen pay too ittle attention to the total carbon con- ent. Silicon receives a great amount of attention, and sulphur is taken much more seriously in the United States than in Great Britain. In conclusion, the question is advanced as to whether the difference in strength of American and British gray irons may not be due to the slow running furnaces in Great Britain producing metal having better properties than that made by large, fast running furnaces "which appear to be general in America."

Mr. Cook's paper was discussed by nearly a score of leading gray iron foundrymen of America, including H. B. Swan, Cadillac Motor Car Co., Detroit; Dr. Richard Moldenke, Watchung, N. J.; George K. Elliott, Lunkenheimer Co., Cincinnati; R. J. Harrington, Hunt-Spiller Corp., Boston, and R. S. MacPherran, Allis-Chalmers Mfg. Co., Milwaukee. Extensive mention of this discussion together with that on paper "Annealing of Gray Iron" by J. F. Harper and R. S. MacPherran and the paper "Cupola Melting Tests with Mixtures Changing During Run" by Dr. Richard Moldenke will appear in the next issue of THE IRON TRADE REVIEW.

The meeting again assumed an international character when Walter Wood, R. D. Wood & Co., Philadelphia, proposed that efforts be renewed to establish an international arbitration test bar for the benefit of gray iron foundrymen of the world. Doctor Moldenke offered a resolution voicing Mr. Wood's suggestion and after its enthusiastic adoption, Messrs. Cook, Remy and Gally assured the association of the co-operation of their respective organizations in striving to formulate an international foundry standard.

Another feature of the international session was the memoir, "Destruction and Reconstruction of French Foundries," submitted by the Association Technique de Fouderie de France. This message from French foundrymen dealt largely with the destruction of casting plants by Germans during the war and with the rapid progress being made in reconstruction. In the absence of a representative of the French association the memoir was read by Raymond Gally, Chareroi, France, who showed several dozen lantern slides depicting conditions in French foundries.

"European versus American Molding Machine Practice" is the title of a paper by E. Ronceray, president Societe Anonyme des Establissements Ph. Bonvillion et E. Ronceray, Paris. Mr. Ronceray's paper deals with the principal types of molding machines used in England, France, Belgium and Germany. Many of these machines are described and illustrated, particularly a number of hydraulically-operated units. The author sets forth certain arguments in favor of hydraulic pressure and opposed to jar ramming for certain molding operations. In many respects, Mr. Ronceray's paper might be called a supplement to that prepared by H. Cole Estep for the Columbus meeting in 1920. Mr. Ronceray discusses European machines from the European viewpoint, and goes into additional detail regarding certain machines mentioned in the earlier paper.

A paper describing how typewriter frames are made in a Belgian Foundry, prepared by Joseph Leonard, president Association Technique de Fonderie de Liege, Herstal, Belgium, was read by title.

Exhibits Show Developments in Foundry Field

SELDOM if ever has the exhibit of foundry and machine shop equipment and supplies been displayed to better advantage than in the three large buildings at Exposition Park. The convenient arrangement of the booths permits the visitor to make a complete tour of all exhibits with an minimum of effort.

The great advance in the development of molding machines is strongly emphasized in this year's show. The proportion of space devoted to this line of equipment is unusually large. Moreover, in addition to the familiar types of machines on display, there are several newly developed units. Sand handling and preparing machinery is displayed by more companies this year than ever before, indicating that the importance of proper care of molding sand is receiving more attention than heretofore. As in previous years, manufacturers of sand blast equipment, tumbling barrels, etc. have attractive exhibits of their products.

Material Handling Equipment Prominent

The tendency noted at the Columbus show in 1920, in that material handling apparatus is playing an increasingly important role in foundry operation, is strongly in evidence this year. Almost a score of manufacturers of industrial trucks, tramrail systems, overhead carriers, weighing scales, air hoists, air and electric buckets, hand and power cranes, wheelbarrows, crane ladles, etc., are represented. About half a dozen foundry engineers are displaying plans and illustrations of foundries which they have designed or constructed.

The number of machine tools on exhibit perhaps is smaller than at any recent show. Most of the machines are being dislayed by tool jobbers of Rochester and Syracuse. Grinders, air and electric portable drills, and pneumatic hand tools are shown by an unusually large number of exhibitors. Metal cutting saws in great number and variety are on display, noticeably confirming the tendency shown in recent years toward the more widespread use of this type of equipment. Woodworking and patternmaking machinery is attractively displayed by several manufacturers.

Foundry and machine shop supplies, including molding sand core mixtures, riddles, vibrators, metals, coke, pig iron, tool steel, files, abrasives, refractories, etc. are shown in many booths. Only a few electric furnaces are displayed, but welding outfits, air compressors, welding gases, etc., occupy the usual ratio of exhibition space. The number of exhibitors is nearly 200, not a few of which are displaying their products at a foundry show for the first time. A complete description of the exhibits will appear in the next issue.

Charter Is Transferred

The Columbiana Foundry Co., headquarters at 903 First National Bank building, Pittsburgh, and plants at McKeesport, Pa. and Columbiana, O., recently was granted a transfer of charter from Ohio to Pennsylvania. The capitalization has been doubled to $600,000. The original Ohio charter was granted this company in 1907 at Columbiana, the capitalization being $300,000. The officers elected under the new charter are as follows: President, F. C. Sullivan; vice president, J. L. Sullivan; treasurer; F. B. McConnell; and secretary, I. G. Miles. The executive offices of the company will be at the main plant, McKeesport, which now is working to capacity with ample tonnage on hand for full operations for several months. The Columbiana plant is scheduled for full operation the latter part of June.

Advance in Sterling Significant

Rise Reflects Betterment in Great Britain and Hope for Success of Large Loan for Germany—Wage Reductions Nearly Over—Winter Wheat Crop Heavy—Mail Order Sales Gain First Time in Two Years

BY JOHN W. HILL, FINANCIAL EDITOR

THROUGH the thinning mist of doubts and uncertainties respecting the outlook, great constructive events which have been accumulating since the first of the year, continue to shine forth. The most important of these in the last week have been the advance of British sterling to above $4.50, the highest rate attained since the great decline began in 1919. The rise came following the announcement that the British government had completed all arrangements to meet its autumn interest payment of more than $100,000,000 upon the American debt.

Sterling's remarkable rise reflects not only improving conditions in England but the better outlook for all Europe. Without recuperation on the continent England could not prosper. The tangible development around which hopes for Europe are being built is the meeting of international bankers in Paris. The acceptance by Berlin of the reparations' commission conditions and the conciliatory agreement by France for a reparations moratorium for the remaining months of 1922 in a measure have smoothed the extremely difficult path of the bankers in arranging an international loan for Germany.

Domestic business continues to make great strides forward. The coal strike remains, but the textile strike is reported to be crumbling. With coal production running at about 5,000,000 tons weekly and with 32,000,000 tons of reserve coal left, no pinch is likely before July 1.

The railway wage reductions have been constructive events. They promise to leave the railroads with a living income, as well as the employes. Strike talk is heard but is not taken seriously. The employes would be far better off in the long run by accepting the cut now and permitting the railroads to give further impetus to general revival, than to block the recovery of business by a transportation tieup. If the railroad labor board has no power to reduce wages when conditions warrant, but only to increase them, it had better not exist. These reductions probably mark the final stages of wage cuts. Developing labor shortages in many places and expanding plant operations mean that industrial wages soon will begin to rise.

Much encouragement is found in reports of a big winter wheat crop. Better times in the farm sections are indicated by the increase of 13 per cent in May mail order sales over 1921, the first substantial gain in two years. Commodity prices continue to strengthen. Dun's index number for June 1 rose 1⅛ per cent in the month bringing the present average 6⅜ per cent above the low point of last July.

Financial enthusiasm in the independent steel mergrs has been somewhat chilled by the testimony before the Lockwood committee and by the activities of the federal trade commission as shown in its senate report.

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The Barometer of Business

WEEKLY COMPARISON

	Last week	Week before	One month ago	One year ago	1913
Business failures	407	451	491	264	300
Cash Ratio Fed. Res. system	78	77.5	76.7	57.4	.....
Loan rate, 4-6 months, N. Y. (per cent)	4¼	4¼	4¼	6¼-7	5½-6
Aver. 20 Ind'l. shares	$93.39	$91.85	$89.90	$70.48	$75.59
Aver. 20 Rail. shares	$84.81	$85.6⅛	$84.60	$71.85	$104.03
Aver. 40 bonds	$80.04	$80.14	$80.48	$69.04	$93.00
Car loadings (week ended May 20)	792,459	777,359	714,088	770,991	*862,074
Bank debits 165 cities (000 omitted)	$7,315,041	$8,767,179	$9,994,000	$7,185,160	.....

*1920.

FOREIGN EXCHANGE (Demand)

	Normal	June 5 (close)	Week before	Month ago	Year ago
Sterling	$4.86	$4.50	$4.44	$4.41	$3.84
Francs	19.3c	9.13½c	9.10c	9.15c	8.20c
Lira	19.3c	5.22c	5.24c	5.35c	5.10c
Marks	23.8c	0.35c	0.35c	0.34c	1.56c

*Monthly average export prices. †March.

MONTHLY COMPARISON

	April	Month before	Year ago	Monthly average 1913
Dodge building awards in 27 states	$353,192,000	$293,636,000	$220,886,000	$71,450,000
Business failures: Number	2167	2463	1487	1336
Liabilities	$73,000,000	$71,600,000	$38,567,769	$22,723,000
Excess of exports	$104,000,000	$74,000,000	$85,885,000	$54,406,000
Excess of gold imports	$10,630,000	$32,502,000	$80,279,000	*$630,716
Bureau of Labor Price Index	152	152	154	100
Bradstreet's Price Index	125.2	126	123.5	100
Economist's British Price Index	4285	4297	4929	2717
Cost of Living Index	154.8	154.7	167.6	100
New incorporations	$792,372,000	$731,866,000	$987,894,000	$172,301,000
Railroad net earnings	†$83,570,000	$46,000,000	$30,807,000	$59,900,000

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Per Cent
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The Business Trend

June 8, 1922

TRADE TODAY, TOLD BY IRON TRADE REVIEW CHARTS

GENERAL SITUATION—Striking advances in British Sterling and prospects for a large loan to Germany strengthen belief in European recovery; domestic business gains continue, with rising employment; improving retail trade; expanding manufacturing.

INDUSTRIAL ACTIVITY—Nonunion coal output near 5,000,000 tons weekly; was around 3,500,000 when strike started; steel and auto parts plants plan expansion programs as demand grows.

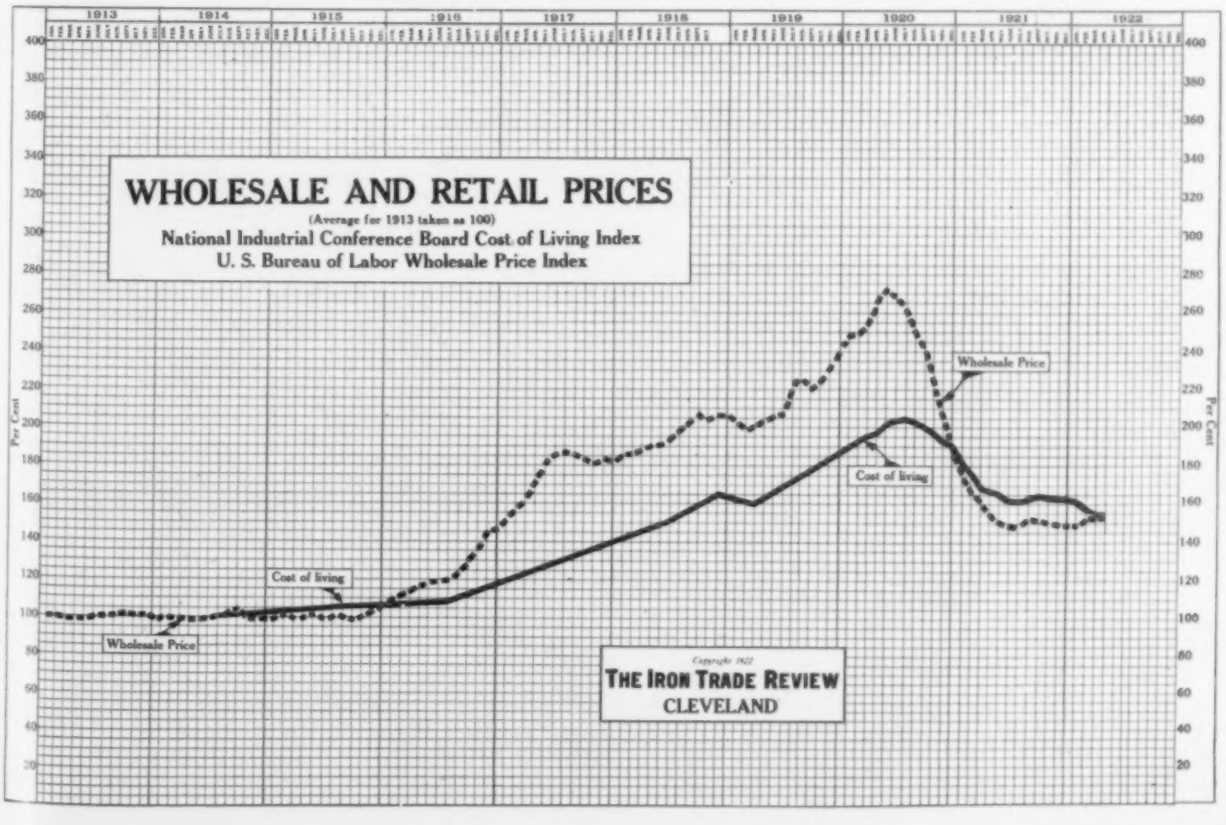
STRUCTURAL AWARDS—Steel awards in April near record peaks touched only in December 1915 and July 1918, chart shows; bookings 99 per cent of capacity; heavier industrial building reflected.

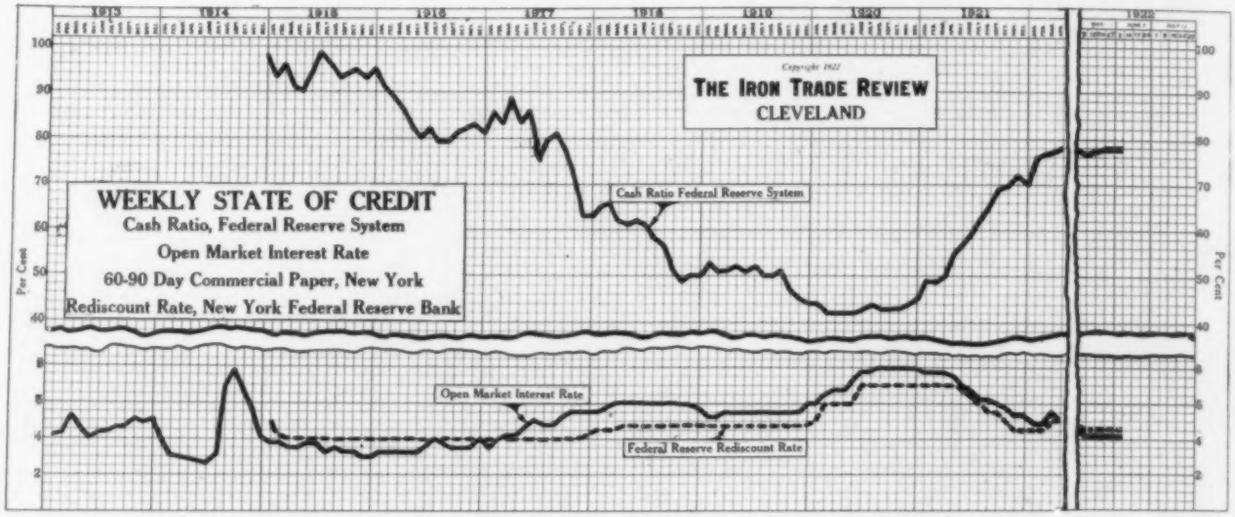
FREIGHT TRAFFIC—Despite coal strike, car loadings are running 3 per cent greater than 1921 and only 5 per cent less than 1920; lack of equipment forecasts car shortage in autumn.

SECURITY PRICES—All issues of liberty bonds, save one, at par and above; renewed strength in investment market more pronounced; 50 representative stocks still discounting prosperity.

CREDIT CONDITIONS—Cash ratio of federal reserve system advanced last week to 78 per cent; all indications point to continued ease in money.

COMMODITY PRICES—Virtually all staple commodities stronger; farm prices higher, save wheat; rise in copper reflects brightening metal outlook.

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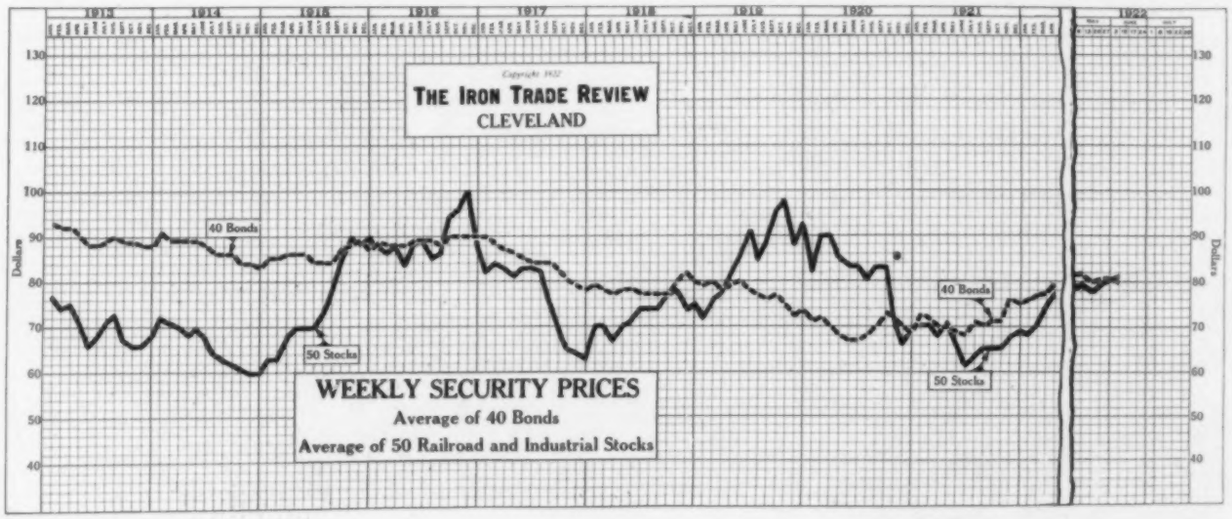
WEEKLY STATE OF CREDIT
Cash Ratio, Federal Reserve System
Open Market Interest Rate
60-90 Day Commercial Paper, New York
Rediscount Rate, New York Federal Reserve Bank
Cash Ratio Federal Reserve System
Open Market Interest Rate
Federal Reserve Rediscount Rate
Per Cent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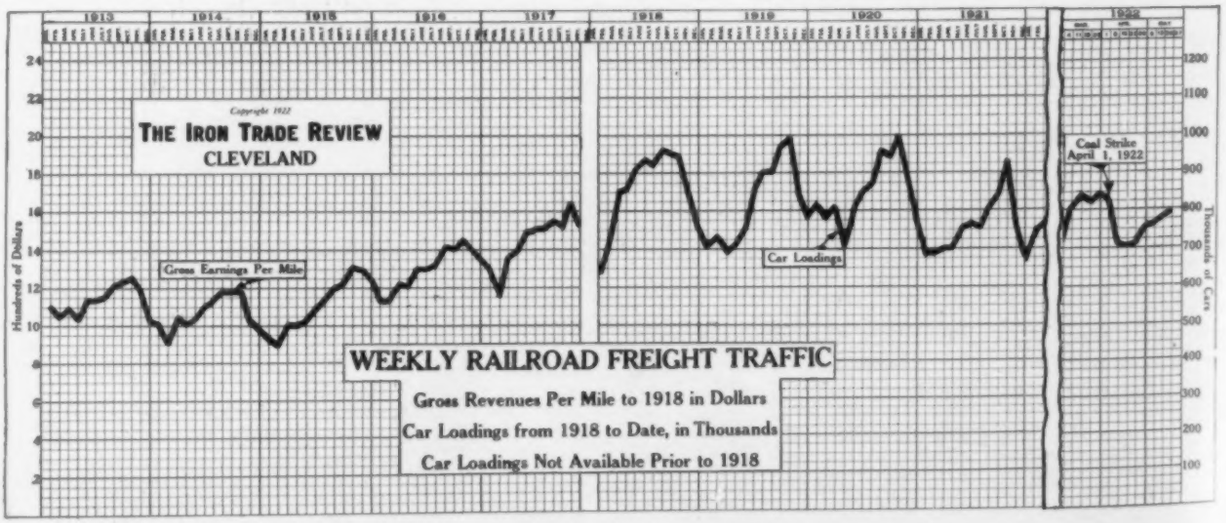
CLEVELAND
40 Bonds
50 Stocks
40 Bonds
50 Stocks
WEEKLY SECURITY PRICES
Average of 40 Bonds
Average of 50 Railroad and Industrial Stocks
Dollars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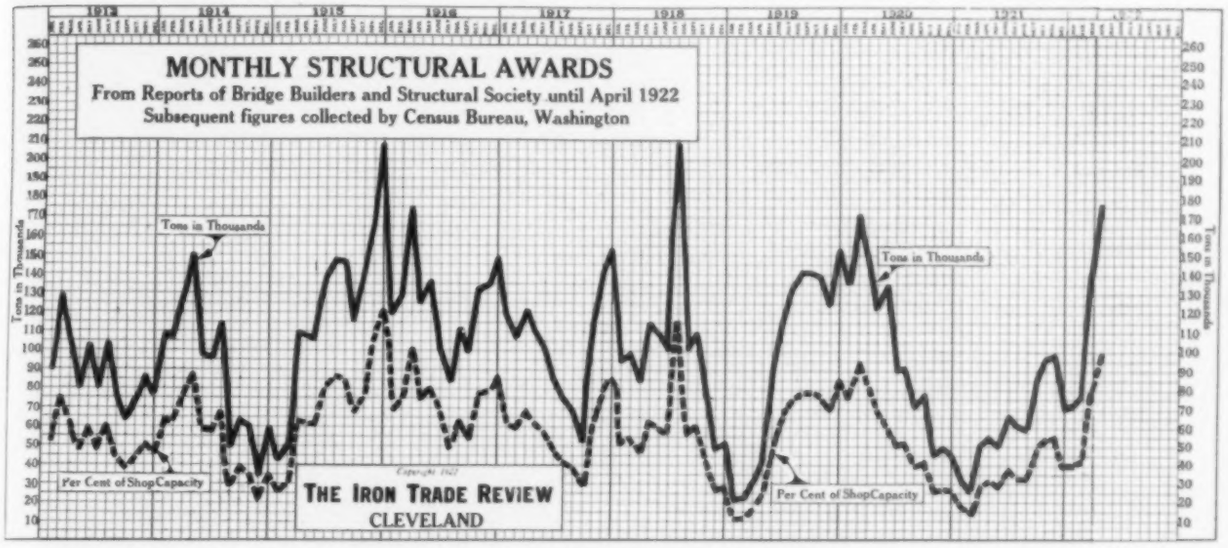
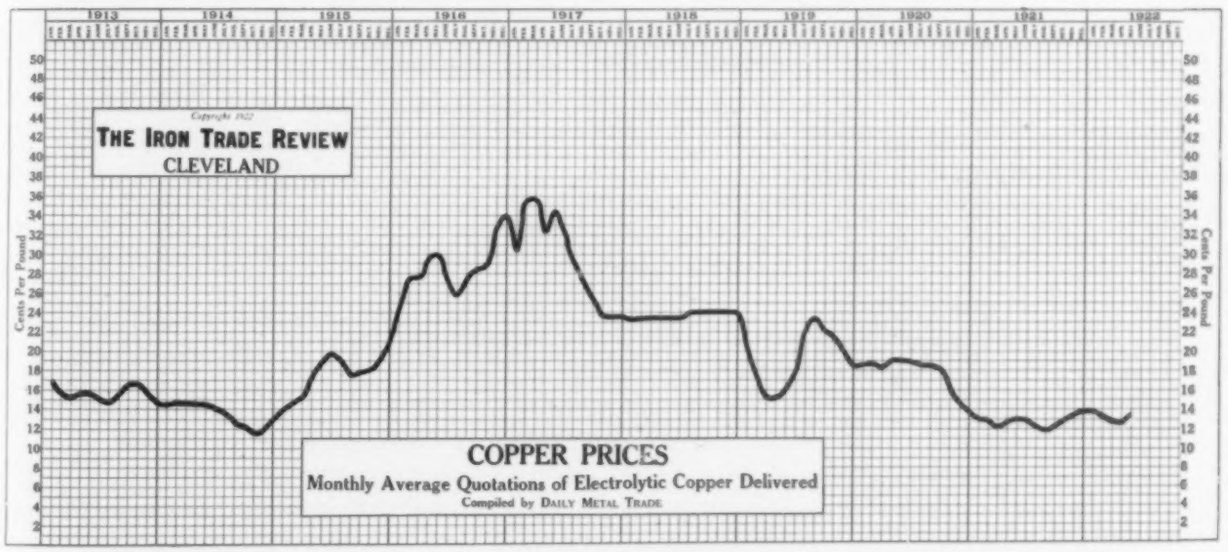
CLEVELAND
Gross Earnings Per Mile
Car Loadings
Coal Strike
April 1, 1922
WEEKLY RAILROAD FREIGHT TRAFFIC
Gross Revenues Per Mile to 1918 in Dollars
Car Loadings from 1918 to Date, in Thousands
Car Loadings Not Available Prior to 1918
Hundreds of Dollars
Thousands of Cars


MONTHLY STRUCTURAL AWARDS
From Reports of Bridge Builders and Structural Society until April 1922
Subsequent figures collected by Census Bureau, Washington
Tons in Thousands
Per Cent of Shop Capacity
THE IRON TRADE REVIEW
CLEVELAND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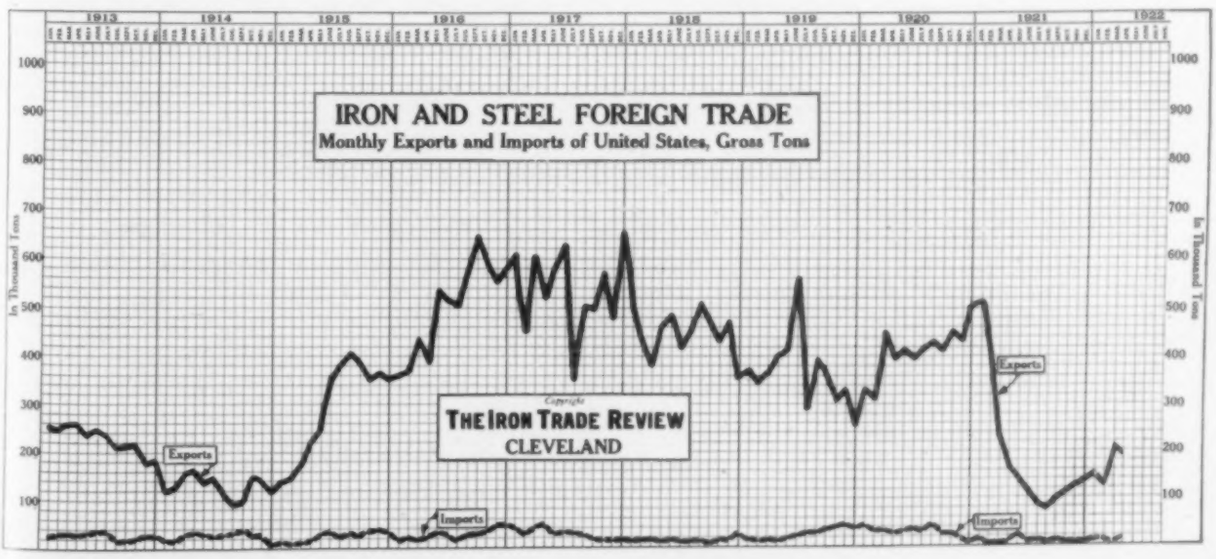
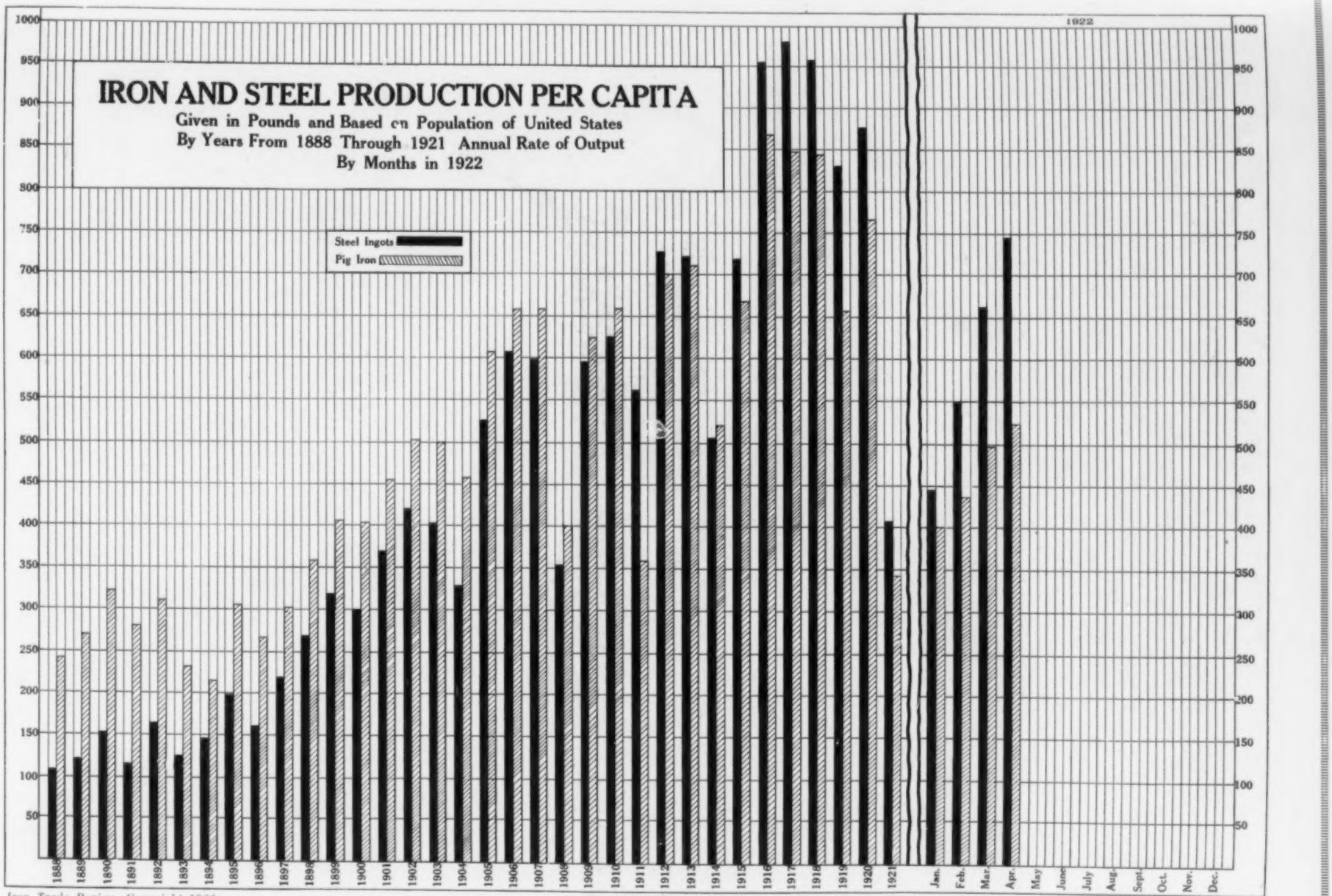
Cents Per Pound
COPPER PRICES
Monthly Average Quotations of Electrolytic Copper Delivered
Compiled by DAILY METAL TRADE


IRON AND STEEL FOREIGN TRADE
Monthly Exports and Imports of United States, Gross Tons
In Thousand Tons
Exports
Imports
THE IRON TRADE REVIEW
CLEVELAND



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Practical Training for Foremen

A Simplified Course in the Study of Industrial Engineering To Enable Group Leaders To Interpret and Apply Rules of Sound Business Practice—Their Functions, and Relationship to Capital and Labor

BY P. L. BURKHARD

Chapter V—Data

FOR the sake of illustration let us suppose that the general manager should call you, the foreman, to his office and say:

"John, what's wrong in your department? Our equipment is practically new. We have the best men we can get and we are paying the average wage rate. Still in spite of this your department is producing only 60 per cent of what we had calculated. We have slipped up on several delivery promises, and we don't seem to be getting the work out. How do you account for it?"

What would you reply? Your answer would depend upon the conditions confronting you. You might reply that there are many causes; equipment down for repair, materials not running even, much work defective, and the best help is none too good these days. But you should be able to tell him what equipment has been down for repair, why repairs have not been made immediately, what per cent of defective and delayed work is due to poor materials, what per cent of work is defective and its causes, also its remedies, what the comparative productive value of every man is, what amount of work should be performed by every man, what amount is being performed, and why it is not greater.

Before you can answer these questions you must know the total equipment hours available, the capacity of every unit of equipment by the hour or by the day, the per cent of allowance required for repair work on equipment, the total human hours available and the normal result to be expected from the sum of the equipment hours times the human hours.

Value of Data

You might acknowledge that greater output would be possible if certain wastes, leaks and losses were not occurring. However, it is hardly probable that you could tell him the exact amount of waste contributed by each of the various causes. We all know that leaks and losses do occur, but we do not all know the specific leaks and losses. Nor do we all know how to find out what causes them, how much these losses amount to over a fixed period of time, and how they can be eliminated.

Given any factory in the country, if the management did not know how much product was being turned out day by day, how many human hours were being expended and how much material was being used, it would not be considered much of a plant. In any industry there is much information which must be on hand. In an engineering sense, this information may be called data.

Three Essentials of Data

Data should be complete, comprehensive, intelligent, on hand when desired, and should serve the purpose for which it has been gathered. Every factory has its data. Much data, however, is incomplete, incomprehensive, unintelligent, never on hand when desired and often does not serve the purpose for which it has been gathered. Other plants have too much data. Many more have too little. The results obtained offer the best test.

This naturally brings up the questions: Have we sufficient data? Have we too much data? The absence of data may cause thousands of leaks. Too much data may mean a cumbersome system, a system often requiring more men and hours charged up to nonproductive labor than to productive. We all know what red tape is, and we don't want any red tape.

The point up to which the compiling of data enables an increasing unit cost is the point of diminishing returns on the value of data. We want all the data we can get which will enable us to produce more effectively. We do not want to be burdened with data which we cannot use and which will hinder or limit production. The purpose of data is to increase productivity, not to limit it.

Data must be complete. If we haven't all the data there are many wastes and losses which are bound to escape our eye no matter how watchful we may be. Data must be comprehensive. This means more than being complete. It must be capable of being understood.

Guessing may be the best way to do a job if there are no facts as to how and why it should be done. But guesswork is something we should and must eliminate in industry. There has been altogether too much guesswork. In the setting of tasks, establishing wage rates, time for performance, delivery dates and costs, data should be on hand when needed. When facts are wanted there should be some means whereby those facts may be immeditely available.

A blue print and a production order, a job ticket and a time ticket are all data. But data is greater than this. Data comprises all the facts necessary from the market to the repair gangs or the machines.

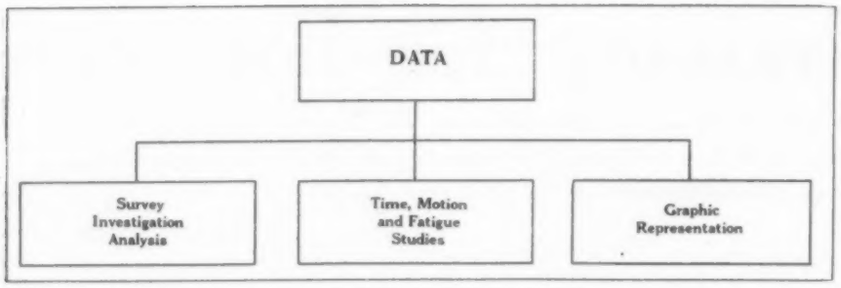
Every factory has its market. Someone buys the goods. There is a selling force that convinces the market of the fine points of the particular product. There is a force which oversees the deliveries and shipping; a force which makes collections and arranges credit. There is the big force of producers who make the product. There is the force which buys the raw materials; the force which receives. And above all is the management which correlates all the activities. The management must think of all the problems, meet all the forces and guide the destiny of every individual of the group.

How could this be done without data? Data offers a field where all the workers meet on common ground, whether they be out in the markets, in the front office, or in the shop. Without the facts the management is handicapped no matter how good the men at the top may be. If the men in the various forces of the organization do not get at the facts and present them as data, the result will not be as it should be.

What is the data which affects us as shop men? Here are a few questions which someone must answer in every organization. The answers give the data necessary to effective productivity.

Business

1. What is the maximum and minimum demand for this product for the coming year?
2. How many competing industries are there fighting for this business?
3. How much of the total business will this concern be able to handle?
4. How much business have we done year by year for the last 10 years?
5. What per cent of growth does that data permit us to calculate for this year?
6. How much have our profits increased or decreased?
7. How much business do we have to



ILLUSTRATING PRINCIPLE OF EFFECTIVE PRESENTATION OF DATA

do to make as much or a greater profit than last year, or previous years?

8. When we figure our business in dollars having a 50 cent value, how much is our profit as compared year by year over the past year?

10. What territorial or seasonal conditions are there to contend with?

Shop

1. What is the maximum productive capacity of the plant?
2. What per cent of the possible production are we getting?
3. What is the rate of productivity as compared over the past 10 years? Per man?
4. How many human energy hours have we available?
5. How many mechanical and equipment hours have we available?
6. How many hours of work have we on hand, and how many more can we plan for?
7. What is the labor turnover?

We see, that data covers a big field. There is no end of data which may be secured, and data is always an aid to production until it becomes red tape, when it is a menace.

Given the average American industry, we may assume that there is sufficient data for most purposes. We may assume that costs are known, that the market is thoroughly understood, that shop facts are analyzed daily. But let us go a little further. The management places a great deal of confidence and responsibility in us. Do we know the facts as regards our own jobs? Are we observing the principle of data in our own work? What are the wastes on the job? Do we know? How well do we know?

General information is not data. Facts require a special search and it is safe to say that we have never made the search that should be made to get at the bottom of the truth. Let us think over carefully the following list of questions and ask ourselves just how much of this information is known. And then we may ask whether or not we have all the data we require?

Men

1. How many men are working under my direction?
2. How many working hours does this constitute?
3. What is the payroll and how much money in the form of human energy am I handling for the firm?
4. What constitutes a day's work for each man? For the group?
5. How much of the day's work am I getting? Per man? Per group?
6. If I am not getting a full day's work is it the fault of the firm? The men? Myself?
7. How do my workers receive their jobs?
8. How do my workers get their tools and instructions?

Materials

1. How does material come into my department?
2. How much material passes through?
3. How much material can I handle in a day, considering the total number of working hours at my disposal?
4. How much waste material can be charged to my department?
5. Do I order materials far enough in advance? If not, how much time should be allowed?
6. How much of the waste in material is due to the method of delivering it to the workers?
7. What delays occur? Why? What are the causes?

Equipment

1. How many equipment hours have I under my supervision?
2. How many equipment hours are being utilized?
3. What percentage of equipment hours should be charged off for repair?
4. What holdups occur? Why do they occur?
5. How can I maintain a high percentage of productivity? Productive hours possible versus productive hours secured.

So far we have assumed that every factory has all the necessary data and is actually applying all the principles of industrial engineering in an effective manner. For the sake of argument let us assume that every factory is operating without these principles. Let us assume that your own factory is now operating on a losing basis. What can we do to prevent this? How can we help the firm from closing down? How can we help our firm to earn a good profit?

In our first discussion we said that an industrial engineer was a man who could stand off far enough to get a clear vision of the problems confronting an industry. Let us now get that detached view of our own plant. If we are going to help our shop get on an efficient running basis we must get that detached view and begin to apply principles, just the same as would a professional industrial engineer.

The second principle of those we have already outlined is data. The application of this principle falls into three parts. Our first step is to make a physical survey or investigation of the plant, department, by department and find out what is wrong, find out what the weak points are, list the leaks and losses we discover, and unearth every waste which may exist. The first thing we should have in making such a survey is an organization chart. We want to know just where authority begins and where it ends. We want to know where responsibility is to be placed, and how it is delegated. If there isn't an organization chart we should immediately take time to draw one up, something like that illustrated.

The second thing we will require is a physical layout of the plant so that we may see at one glance over which departments the various executives exercise authority. Probably no two plants have ever been laid out the same, so a layout of one plant would not do for another. The third thing we will want is a layout having the routing of production orders. Where does the raw material come in? Where is it stored? What is the process it follows through the shop? Where does it end up? This layout becomes more difficult as the number of different jobs increases. In the production shop turning out one product or even up to 100 standard products it is a relatively simple matter to trace the routing from receiving room to shipping room. In the job shop it becomes more difficult. When the product is not standard, or when there is no frequency of a certain product it may be well to pass up this step until we are ready to plan. With the three charts in hand let us make our survey. Let every man consider his own department and collect the data concerning his department. After we have sufficient information we may continue our application of the principle of data.

The next step we must take will be to analyze our discoveries, making a diagnosis to determine just what other principles may have been violated, and consider the possibilities for improvement. During the second step in the application of the principle of data, we consider the greatest factor of industrial activity. It has to do with men. We have made a general investigation as regards men, under the first step, but it now behooves us to get more specific data as regards the activity of men.

One of our greatest studies as industrial engineers will be of this human activity. We are, therefore, interested

to secure data of the utilization of human activity or human energy. The operation of securing this data is called "timing." Timing enables us to keep exact data of the expenditure of time. It enables us to be specific. Our investigation gave us general data. Our analysis and diagnosis will give us specific data.

There are three sub-divisions of timing. Time studies; motion studies and fatigue studies. In our application of the principles of industrial engineering we must always think in terms of time for time is money. An hour saved by any man is money earned in proportion to his hourly value. Effective production requires the expenditure of the minimum amount of time. Therefore, data should be kept of time expended. The watch being the best and most reliable time indicator we have, timings are made by the watch.

Time studies were first made by Dr. F. W. Taylor, and as taken by the men under his direction were complete in every detail. The Taylor time study was also a motion and fatigue study. However, others who have followed him have not been as thorough and a time study has become an overall study without details. The time study as commonly made determines when an operation begins and when it ends.

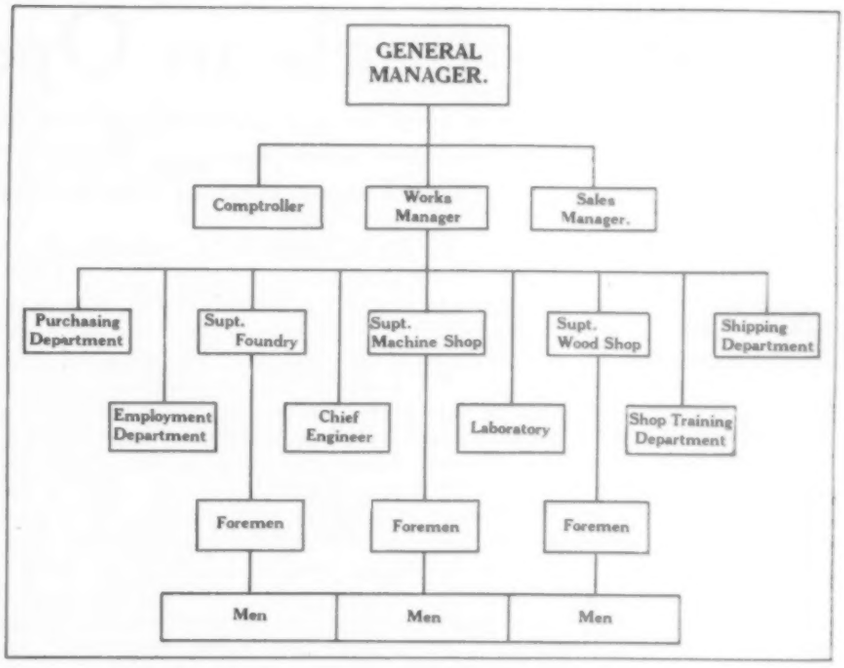
On certain forgings a time study might show the time steel is taken from the forge and the time at which it is thrown into an elevating platform. Such studies continued over a period reveal the variations in time required for each job, and the wastes between forgings. Motion study is the decomposition of operations; that is, subdividing the operation into parts and timing and analyzing the parts. The motion study is a complete study and reveals conditions which are unstandardized or unsatisfactory, as well as the motion itself.

In the forging of a tire iron we observe the operations as follows:

Pick up at fire, carry to hammer, place on first die, stamp, place on second die, stamp, stamp, carry to cut off, cut off, carry to hammer, place on first die, stamp, stamp, carry to cut off, cut off, carry to fire, pick up next rod at fire.

Fatigue studies are studies made not only to determine the time of waste motion with a view to eliminating all existing waste motions which cause fatigue, but to determine what interval of rest is essential to permit the worker to recuperate after every motion.

Data secured by timing serves two purposes; it gives the facts, and thereby shows the possibilities for standardization and planning. In other words, timing permits the setting of standards on all jobs and operations. The setting of standards is a function of the planning department, and will be studied more thoroughly under planning. However,



TYPICAL ORGANIZATION CHART FOR USE WITH PLANT DATA

standards cannot be set until the facts have been accumulated and until timings have been made to verify all impressions.

Our next step is to summarize and classify our previous findings. At this point a report might be prepared showing what waste exists and suggesting through classification of waste under the principles, what procedure must be followed to put the plant on an efficient running basis. Data for shop purposes may be kept in any or all of the following ways: Report, ledger, special forms, card index and graphs.

The most effective way of presenting data is with graphic charts. When data has been accumulated, analyzed and verified it should be prepared in graphic forms, as the peaks and valleys give a picture that figures often fail to do. A man does not have to be a certified public accountant to understand a graphic chart. It is clear before him and readily understood. Among the many things which may be shown graphically are:

1. Available human energy in hours over a period of time.
2. Human energy in hours actually expended productively over same period.
3. Available equipment energy in hours over this period.
4. Equipment energy actually expended productively over this period.
5. Total number of men employed day by day.
6. Total payroll per day over this period.
7. Quantity output over period.

The bar chart permits plotting of data by bars in proportionate lengths. The bar is useful in comparing the work done in different departments, the output of different sections or the comparative output of different machines. It not only shows the management where the best results are coming from but stimulates friendly rivalry and competition among the workers because they can see in tangible form the comparative results of their work.

To represent facts graphically is a simple process. For instance, in showing the available human energy:

Men	Hours	Day	Total hours
20	8	Monday	160
19	8	Tuesday	152
21	8	Wednesday	168
16	8	Thursday	128
17	8	Friday	136
20	4	Saturday	80
21	8	Monday	168
22	8	Tuesday	176
19	8	Wednesday	152
20	8	Thursday	160
16	8	Friday	128
22	4	Saturday	88
21	8	Monday	168

There you have data for chartering the available human energy at work in your department for 13 days. Against this you should chart the number of human energy hours which were productively engaged:

Day	Hours of work produced
Monday	90
Tuesday	98
Wednesday	76
Thursday	68
Friday	70
Saturday	41
Monday	97
Tuesday	98
Wednesday	80
Thursday	82
Friday	64
Saturday	42
Monday	88

Graphic charts may also be used for timing data as previously outlined. Charts may be made showing the distribution of the factory dollar as illustrated under industrial economics. The purpose of graphic charts is to present the data in a form readily visualized.

Utilizing Fuels in Open Hearths

Present Pressures of Both Air and Gas in Gas-Fired Furnaces Are Too Low and Should Be Increased from Ounces to Pounds—Experiments Show That Time of Heating May Be Reduced

BY HERBERT F. MILLER, JR.

ABOUT 10 years ago the author was in charge of a small open-hearth furnace plant in which oil and natural gas were used for fuel. At that time the furnaces were slow and had high fuel and repair costs, however, these unfavorable conditions in reality afforded a splendid opportunity to experiment. One of the furnaces was of the producer gas type with a single brick gas port. Oil was used in this furnace for fuel and was introduced through a water-cooled tuyere which projected across the uptake and terminated just short of the nose of the port. The time of heats made with this method of installation averaged 6½ hours. It was thought that if the water-cooled tuyere was pulled back, the flame having more distance in which to travel before reaching the hearth would be in better shape to do its work.

Preheat Air and Fuel

Over a period of some weeks the burner was gradually pulled back, but no marked change in the appearance of the flame occurred until it was decided to place the end of the burner projecting above but not entirely across the uptake leading into the gas port. To make the matter clear, it may be stated that the furnace had two air uptakes and a gas uptake, which, however, was used to transmit air to the gas port, so that in reality there were three air uptakes at each end of the furnace. Fig. 1 shows a producer gas furnace equipped with a water-cooled oil burner. The tip of the oil burner was moved back from point *A* to point *B* as shown in the illustration.

With the burner in the position just described, a most startling change in the appearance and power of the flame took place. The flame turned to a pure dense white such as the author had never before seen. The time of the heats dropped to an average of 4 hours, 2½ hours faster than formerly. Magnesite brick in the bottom of the port melted together; the arch of the port melted and the roof of the furnace burned quite easily. Of course, this method of burning fuel could not be continued under the construction then in use, as the furnace would soon have burned down. The uptake leading to the gas port was blocked off and the furnace proceeded in the normal way. This experiment has been repeated with other furnaces and the same results have been obtained.

The first thought suggested is that this method is not a practical one to use as the open-hearth furnace brickwork will not stand the temperature. Let us first examine the facts surrounding this experiment. The oil was introduced into the furnace at about 65 pounds pressure per square inch, and atomized with steam at a pressure of 65 to 75 pounds per square inch. It was blown through an ordinary type of oil burner. The great speed at which this mixture went through the gas port caused it to act as an aspirator for the preheated air rising up the uptake leading into the gas port. This highly heated air was hit at right angles by the stream of vaporized oil and the two united under pressure and at great speed in a mixing chamber having a small cross section.

These conditions approached the ideal for producing a flame of intense heat and perfect combustion. Here was given the idea for the development of the power of a flame in an open-hearth furnace, the principle being to put both preheated air and fuel under high pressure separately and then unite them in a mixing chamber of small cross section before they passed into the hearth of the furnace.

Experiment With Gas

On another furnace in which natural gas was used for fuel, a wide gas port was installed. The combustion of the flame in this furnace was good, but owing to the wide port, the flame control was poor. This resulted in a high brick cost as the roof was easily burned. The time of the heats with this design of port averaged about 6½ to 7 hours. It was thought that if the port were made considerably narrower a flame with better control would be secured.

A furnace was built along these lines and the control of the flame was secured as had been planned, but the depth of the gas layer was so great that the flame was smoky on the bottom and would not develop the temperature required at the point where it was needed. This experiment caused speculation as to whether a port could be designed which would embody the good qualities of both the wide and narrow port.

An experiment was made for solving this problem of combustion. A pipe was introduced into the port with one end well down on the slope of the gas port and the other projecting into the air

From a paper presented at the New York meeting of the American Iron and Steel institute, May 26. The author is assistant superintendent, Lackawanna Steel Co., Buffalo.

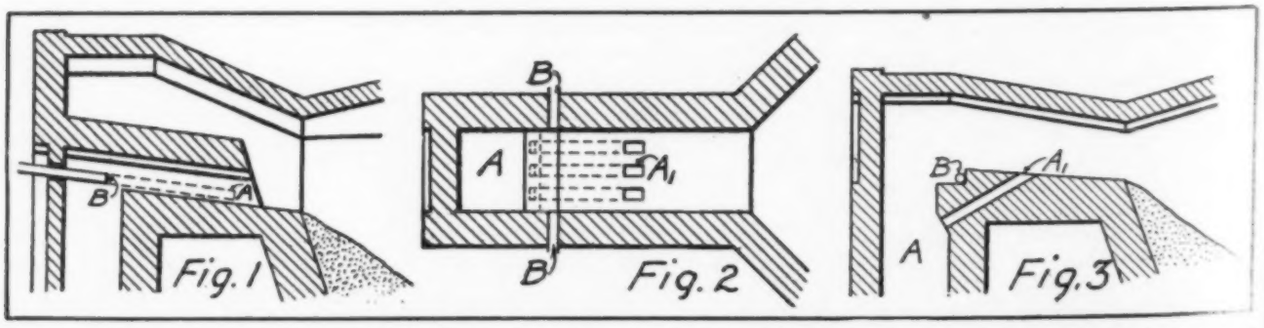


FIG. 1—PRODUCER GAS FURNACE EQUIPPED WITH WATER-COOLED OIL BURNER. FIGS. 2 AND 3—PLAN AND ELEVATION OF FURNACE DESIGNED FOR NATURAL GAS, PART OF THE AIR BEING BY-PASSED UNDERNEATH THE LAYER OF GAS THROUGH OPENINGS A_1

...ce. The draft of the furnace pulled air through the pipe introducing the air under the layer of gas as it flowed through the port. The flame changed from a smoky one to one of pure white. As soon as it was possible to do so, a port was built in which this feature of combustion was embodied. The gas was introduced to the port through two pipes terminating on opposite sides of the port and at right angles to the center line of the gas port. Under the port slope several by-passages for air were provided, one end of each passage terminating in the air uptake and the other end well down in the gas port. Thus the flame was introduced into the furnace between an upper and lower layer of preheated air. These passageways being at an agle with the bottom of the port made them somewhat difficult to keep clean so that on a later design the by-passages were made parallel to the bottom of the port.

Figs. 2 and 3 show a furnace designed for natural gas for fuel in which part of the air is by-passed underneath the layer of gas through openings A_1 from air uptake A. The gas inlet pipes are shown at B. The first installation, however, developed an interesting fact. In cleaning out these by-passages, compressed air under a pressure of 75 pounds was used. A trial was made to see how much deflection the flame would have if air under the same pressure was introduced into the by-passages and under the layer of gas. Instead of causing any deflection of the flame toward the roof, the flame actually flowed into the furnace at a lower level and in a much more compact form. This showed that compressed air, if rightly applied, could be introduced both above and below a gas flame without injury to the furnace brickwork.

The cross section of the port, being much less in its nose than at the uptake, gave a flame of great speed as it issued from the port, but with the introduction of compressed air the speed of the flame was still further increased. Without the use of compressed air, however, this furnace showed remarkable results: 429 heats were taken off a 9-inch roof. The heats averaged slightly less than 4 hours and the gas consumption averaged 2800 cubic feet per ton. The furnace was only a small one, the charge having a total weight of 30,000 pounds per heat. Cold iron was used and 15 per cent of limestone was charged. The steel was made into castings. Later on, the same idea of mixing with the gas was tried out on furnaces using producer gas for fuel. The first experiments along this line had by-passages from the air uptakes to the gas port. This was unsuccessful, as the pressure of gas from the gas port caused the gas to flow back through the by-passages into the air uptakes. This showed clearly that in order to mix the preheated air with producer gas, the air must be introduced into the gas port under a pressure higher than that of the producer gas, but as the company for which the author was working at that time was unwilling to furnish the proper means for producing this action, the development of the idea was not pushed forward until a few years later. Figs. 4 and 5 show furnaces designed for producer gas for fuel in which the air is by-passed through the diagonal passages A_1 from the air uptakes A to the gas port.

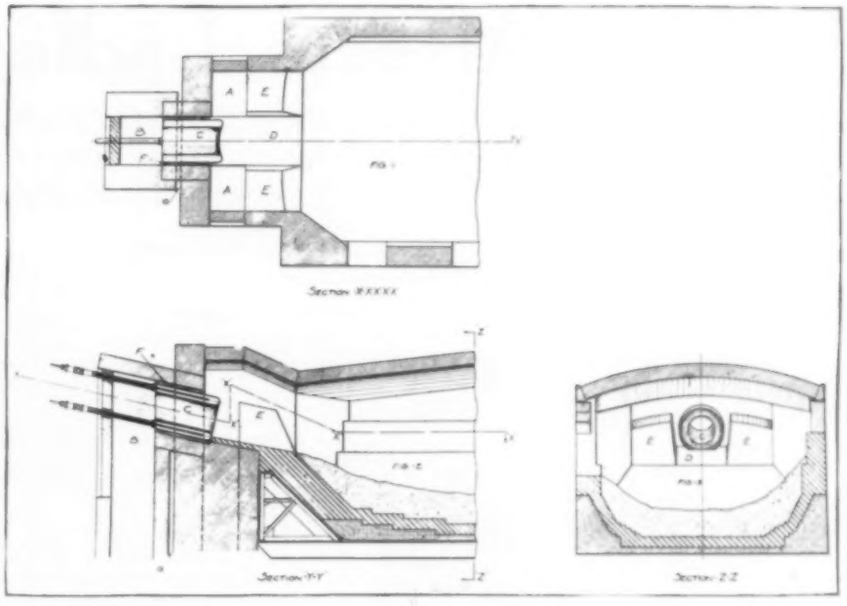


FIG. 6—DIAGRAMS OF A FURNACE ILLUSTRATING A CIRCULAR WATER-COOLED PORT IN USE AT THE PLANT OF THE LACKAWANNA STEEL CO.

In 1917 and 1918 the thought again came to develop some means of getting a better combustion in open-hearth furnaces and as a result of experiments the circular water-cooled port in use at the Lackawanna Steel Co. was developed. This port has given excellent results in combustion and has decreased the rebuilding cost about 20 cents per ton.

One means of using compressed air with open-hearth fuel now is being developed by the Egler and McKune systems. Each has given excellent results in increasing production and reducing fuel costs. However, some operators have a doubt as to whether the use of compressed air with the fuel will not tend toward excessive rebuilding.

Again the point is brought up, as in the experience some ten years ago with the oil furnace, of being able to develop a high temperature and intense flame, but having a furnace lining that would not resist the heating action of the flame. Here is a condition which would seem to limit the development of the open-hearth furnace, but is not this seeming limitation a hand point-

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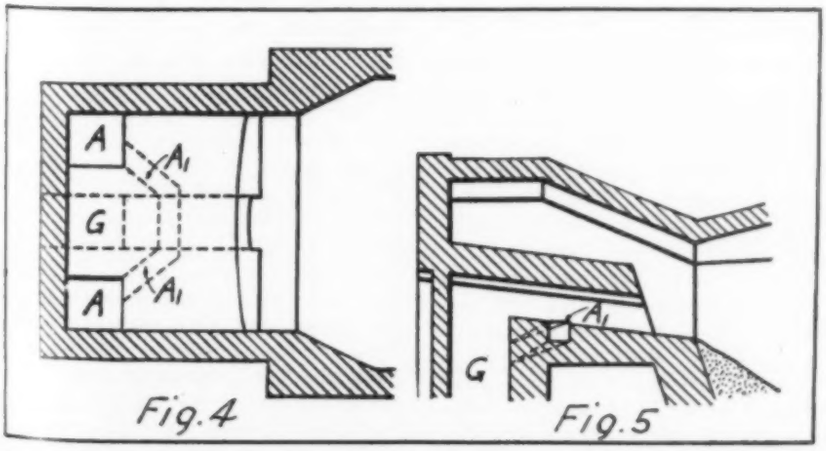


FIGS. 4 AND 5—FURNACES DESIGNED FOR PRODUCER GAS IN WHICH THE AIR IS BY-PASSED THROUGH THE DIAGONAL PASSAGES A_1 FROM THE AIR UPTAKES A TO THE GAS PORT

Design Affects Ladle Operation

Different Types of Gearing Have Direct Relation to Ease in Handling and Safety—Merits and Disadvantages of Worm, Spur and Helical Worm Gears—Care of Equipment Emphasized

BY A. W. GREGG

GEARED ladle design merits careful study and presents more engineering problems than casual and superficial attention would indicate. Foundry methods and equipment have been undergoing changes during the last 10 years, but regardless of what developments may be expected in the foundry of the future, it is reasonably safe to predict that ladles will be used to carry the molten metal from the cupola or furnace to the molds. The majority of ladles in use are geared, the exceptions being bottom-tap types for large steel castings and hand and shank ladles for small castings.

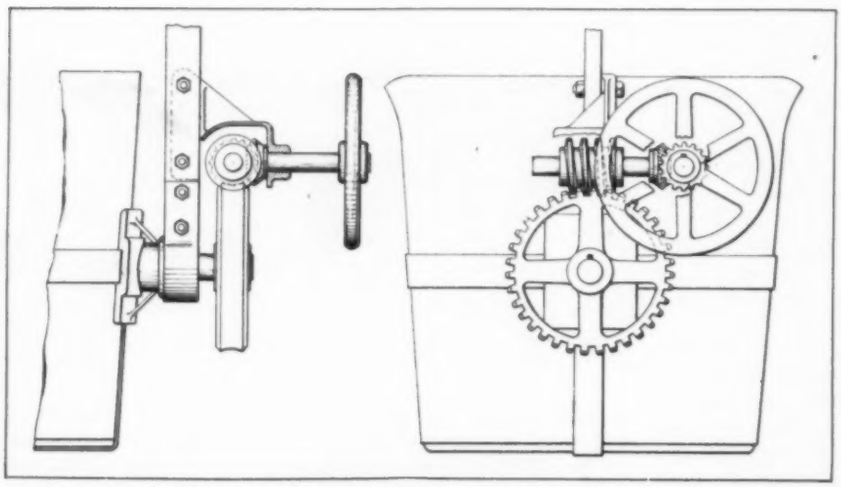


FIG. 1—SIDE AND FRONT VIEWS WHICH SHOW THE ARRANGEMENT OF WORM GEARING ON A FOUNDRY LADLE

Unless a geared ladle is designed and cared for properly, it is an endless source of trouble and danger in the foundry. In the first place it is used daily. Heat from the metal and from the ladle heater cause expansion of bail and bowl, followed by contraction on cooling. With most styles of geared ladles the expansion and contraction affect the alignment of the gearing. In many foundries the lubrication of ladle gears and trunnions receives little attention, and this neglect results in excessive wear. For a time this causes hard turning and later too much play in the gearing. Unless grease cups and oil holes are located so that the lubricant gets to the bearings and gears properly and in sufficient quantity, the ladle gearing will suffer, no matter how much care is exercised.

When lost motion is present in the gearing a dangerous drop of the ladle occurs during pouring, caused by the flow of the metal. This usually results in a splash of molten metal which may cause serious injury to several men. On the other hand, if the gears are too tight and bind, pouring is an arduous task which cannot be performed properly, and cold-shut or misrun castings result.

The important features of geared ladle design fall under the following classifications:

1. Type of gearing
2. Gear ratio
3. Design of housing
4. Location and type of trunnion.

Geared ladles usually are classified according to their type of gearing. This and the gear housing are the features of greatest interest and importance. There are three types to be considered, namely, worm, spur and helical-worm.

The first type of gearing to be applied to a ladle was the worm, which is illustrated in Fig. 1. Worm gearing has been used on ladles in this country for from 70 to 80 years. The principal improvement which has been made in this time has been the substitution of cut tooth gears and cut worms for cast. The gearing is compact in design and is fitted with bevel pinions which allow the extension of the handwheel shaft at right angles. When the gearing is in good condition and perfect alignment it permits a smooth and easy turning action which affords good control of the stream of metal flowing from the ladle to the mold. One of the greatest advantages of worm gearing lies in the fact it is self-locking The disadvantages are its tendency to bind unless in perfect condition; the fact that it is relatively slow; and the low efficiency of the gear train which makes it harder to turn than the other types. Most ladles in use at present in this country have worm gearing. The spur-geared type illustrated in Fig. 4 was introduced into this country about 30 years ago in some of the pipe foundries, where a ladle operating faster than worm gearing permitted was desired. Where fast pouring is required this gearing still is used largely. High gear efficiency and less tendency to bind than worm gearing are among its advantages. One of its disadvantages is that it tips the ladle in a slightly jerky manner due to the finger pinion which is necessary to get gear reduction with compact design. This jerky action causes uneven pouring and a tendency to form a skull on the sides of the pouring lip as the metal washes up and down. However, the most serious trouble with the spur gearing lies in the fact that it is not self-locking.

The third type of gearing, known as the helical-worm is a recent development and eliminates many of the troubles found in the two older types. The most important feature of this gear mechanism lies in the fact that, unlike the first two types described, the housing is mounted on the trunnion and has no attachment to the bail except through a sliding support. This results in making the tilting mechanism an independent unit, and the alignment of the gears is not affected by distortion of bail or bowl or by wear on the trunnion journals.

The gear combination has an efficiency about 33 per cent higher than

From a paper presented at the Rochester, N. Y., meeting of the American Foundrymen's association held June 5-9, 1922. The author is with the Whiting Corp., Harvey, Ill.

at of the worm and is self-locking. ecause of the balanced thrust obined through the helical gears the rning action is smooth and requires ttle power. The helical gearing perits a wide range of tipping speeds to be obtained, by interchanging the elical gearing with another set of different helix angles.

Determining Gear Ratios

Fig. 2 shows the gear ratios ordinarily used for ladles of from 1500 to 40,000 pounds capacity for worm and helical worm types. The ratio is determined primarily by the size of the ladle and the desired speed of pouring. The gearing ratio as used in Fig. 2 is the number of revolutions of the handwheel for one complete revolution of the ladle. Four different ratios are shown for each size of ladle with the helical gearing and one ratio for each size with worm.

The location of the trunnion is a matter of importance in the design of any ladle. The customary practice is to place the trunnion at practically the center of gravity of metal and ladle in an upright position. Fig. 3 shows the turning moments of a 10-ton ladle at various angles. The curves show the moments due to friction, eccentricity of ladle and metal and also the total moment. These curves are based on the results obtained in a series of tests conducted to determine trunnion location for which two factors must be taken into account. The effort required to tip the ladle in pouring direction and the effort required to right the ladle from any position must be considered.

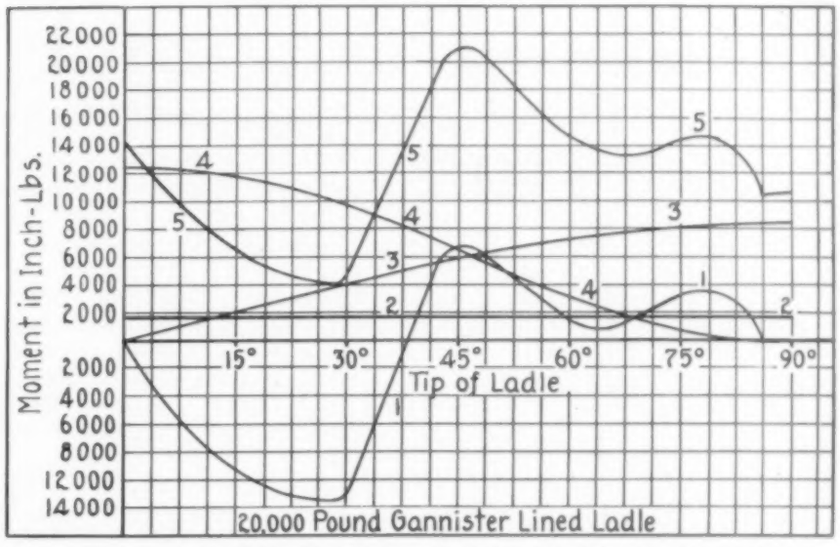


FIG. 3—THE CURVES SHOW THE TURNING MOMENTS OF A 10-TON LADLE. IN CURVE NO. 1 THE MOMENT IS DUE TO ECCENTRICITY OF METAL, NO. 2 DUE TO TRUNNION FRICTION, WEIGHT OF LADLE ONLY, NO. 3 DUE TO ECCENTRICITY OF LADLE, NO. 4 DUE TO TRUNNION FRICTION, WEIGHT OF METAL ONLY, NO. 5 TOTAL OF ABOVE MOMENTS

Moment Decreased

By moving the trunnion one inch upward, the moment required to right the ladle is decreased about 8000 inch-pounds with the ladle at 30 degrees, while the effort required to tip the ladle in the pouring direction is increased about 8000 inch-pounds at 45 degrees. Lowering the trunnion 1 inch, reverses the conditions; that is, the moment required to right the ladle at 30 degrees is increased 8000 inch-pounds and the moment to tip the ladle in pouring direction is decreased about 8000 inch-pounds at 45 degrees. Thirty degrees is the angle at which the greatest effort is necessary to right the ladle and 45 degrees the angle at which the greatest effort is required to tilt it in pouring direction.

The force required on the handwheel for the ladle as described may be calculated for any angle by dividing the moment at that angle by the gearing constant shown. This constant, which is known as the moment ratio, is 530 for helical and spur gearing, and 400 for worm gearing. The result is derived by taking into account the size of the handwheel, the gearing efficiency and the gear ratio. For example; at 45 degrees for a 10-ton helical geared ladle, the total moment is 21,000 inch-pounds and the force required on the hand wheel is 21,000 divided by 530 or approximately 40 pounds. This calculation is based on dry bearings.

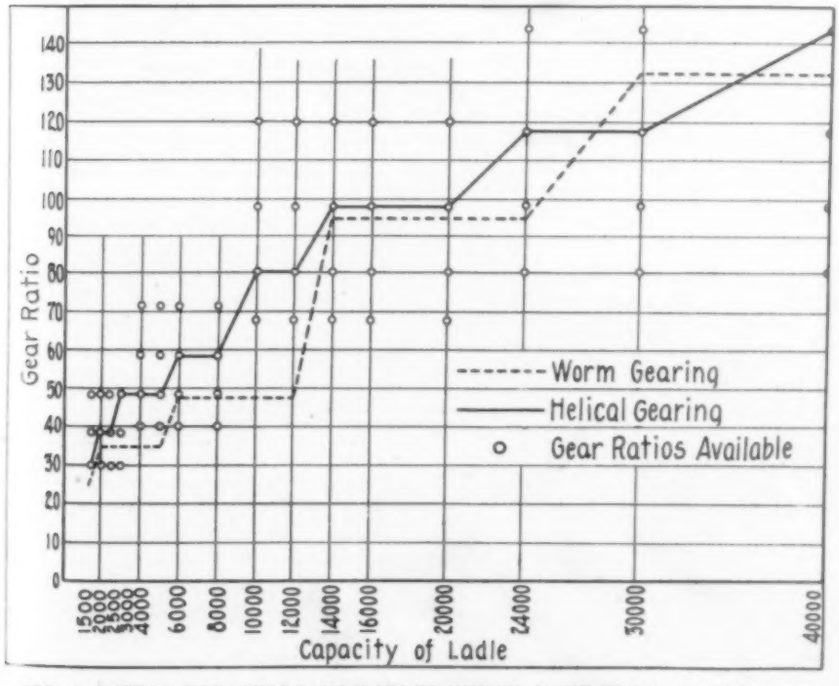


FIG. 2—RATIOS FOR GEARS ON LADLES WHICH HAVE FROM 1500 TO 40,000 POUNDS CAPACITY

Trouble May Be Eliminated

Other points of importance in ladle design are the types of trunnion and bail. Both should be of rolled mild steel and in calculating the size a factor of safety of about 10 should be used.

Foundrymen have been prone to consider ladle trouble a necessary evil of the foundry business and something to be endured. This is not true. Proper care and proper design will do away with most of the troubles en-

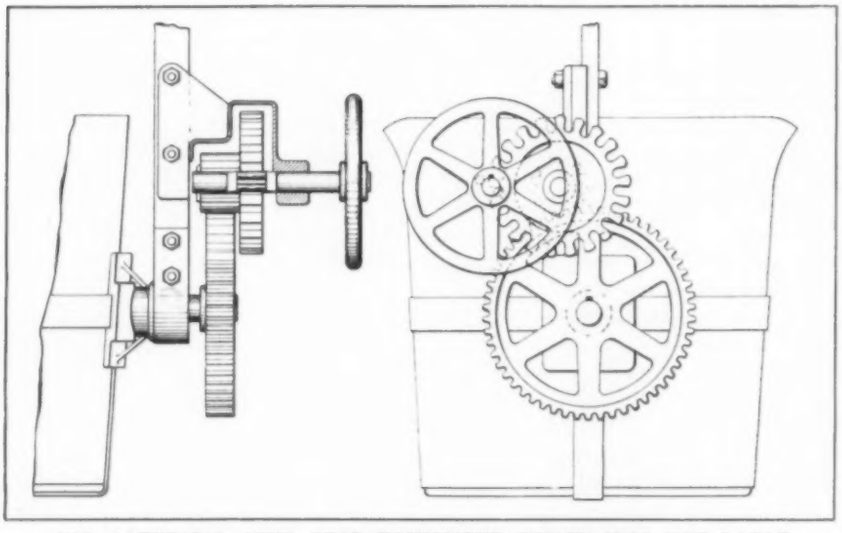


FIG. 4—TYPICAL SPUR GEAR EQUIPMENT WHICH TIPS THE LADLE

countered with geared ladles. Safety should be placed above all other considerations in the design and use of ladles.

Fuels in Open Hearths

(*Concluded from Page* 1647)

ing out the road to a further necessary evolution in open-hearth furnace design? One cannot help but think that the construction of open-hearth furnaces will be developed along the lines that had to be made to produce the modern high-power blast furnace. By this is meant that the hearth and end walls, including the roof, will probably have to approach in similarity the construction of the bosh of a blast furnace, having roof and wall coolers alternating with the brickwork. The present pressures on both air and gas are much too low, and no reason is evident why these should not run up into the pounds instead of the ounces per square inch.

We have but to look to the acetylene burner, noting the pressures used and the rapidity of work done under these pressures, to sense the possibilities which may be developed in an open-hearth furnace with high pressure in both air and gas. Furthermore, the blast furnace may also teach us that with proper sealing of the doors, the sheeting in steel plate of the walls, air and gas may be introduced into the furnace under high pressure, through a small orfice and exhausted by mechanical means without the necessity for intermediate dampers. There is no doubt that heats charged with scrap and cold pig iron can be tapped in 3 to 4 hours after starting to charge, when conditions of high pressure air and gas are developed.

It is apparent that we have scarcely scratched the surface of the field in which the ideas for developing power of open-hearth fuels are hidden.

British Lower Income Tax About 17 Per Cent

The principal feature of interest to business men in the British government's budget, which was introduced in the house of commons by Sir Robert Horne, chancellor of the exchequer, on May 1, is the reduction in the income tax from six shillings to five shillings on the pound. This reduction amounts to approximately 17 per cent. Another concession to business is found in the proposal to fund unpaid excess profits taxes a period of 5 years permitting them to be paid in installments running until 1927 with interest at 5 per cent on the deferred balances. The excess profits tax was abolished Jan. 1, 1921, but there are still large amounts remaining unpaid.

The corporation profits tax remains unchanged and this is an unsatisfactory feature of the budget from the business standpoint. However, it is felt in London that the general effect of the new budget will be to stimulate business.

At the offices of the Federation of British Industries it was stated.

"There has been a demand throughout the country," for a reduction not of one shilling but of two shillings a pound. It is regretted also that there is no easing of taxation through a reduction in government expenditure. In addition the federation would have greatly welcomed the abolition of the corporation profits tax which is a hardship to the ordinary stockholder. The yield from this tax is small and its imposition is injurious to trade. Taxation at present rates can only be paid in many instances by encroaching upon capital or slaughtering assets, a process which drains industry and commerce of the very resources essential to a revival of trade. The present reduction in the income tax is entirely insufficient.".

Sir W. Peter Rylands, vice chairman of Pearson & Knowles Coal & Iron Co., Warrington, says the new budget is possibly neither better nor worse than might have been expected and that few will dissent from the fairness in the disposition of reliefs.

According to Sir Robert Horne, the estimated expenditure of the British government for the year ending April 5, 1923 will be £910,069,000 ($4,000,000,000) with the estimated revenue £910,775,000 ($4,030,000,000), the estimated surplus of revenue over expenditure for the year being £706,000 ($30,000,000). The budget provides £25,000,000 ($110,000,000) for payment of interest on the debt to the United States.

Anglo-American trade will profit in a minor degree from the new budget in that letters from Great Britain to the United States which have heretofore been charged 2 pence (4 cents) will go for 1½ pence (3 cents), effective June 1.

Labor Troubles Closing Australian Plants

Australian industries are confronted at present with serious labor trouble in the demands of the miners for shorter hours without reduction in wages. The Lithgow Steel Works has ceased operations and many other metal-working establishments also have closed. Reliable information is difficult to obtain, but it is known that the prime minister's round table conference has failed, and a deadlock between the miners and their employers now exists. Work has been suspended at the Iron Knob ore mine of the Broken Hill company in South Australia, and the steelworks in Newcastle is practically closed.

The plan for a state iron and steel works initiated by the Queensland government has been suspended indefinitely. The latest development is the appointing of the steelworks manager as general superintendent of the state coal mines, the staff which was engaged in the preliminary work having been laid off some months ago. The government was unable to obtain the necessary capital in London.

According to a report from the Broken Hill company iron and steel imports into Australia during February amounted to 11,301 tons as compared with 12,798 tons in January and 16,516 tons in February of 1921. The largest item in the list is that of rails and accessories, the value of the imports in February amounting to £34,630 as compared with £4430 in January and £767 in February 1921.

Adirondack Ores Are Important

Modern Methods for Concentrating Iron Formations Bringing Into Greater Use Extensive Deposits—Total Tonnage Estimated at 1,736,000,000 Tons, in Area of 10,000 Square Miles—Comparisons with Lake Ores

BY FRANK L. NASON

THE total iron ore bearing area of the Adirondack region is approximately 10,000 square miles. Of this total there are approximately 1500 square miles of gabbro and other old intrusive rocks. The iron ores of this area are, so far as known, titaniferous. There are many old prospects in this area, but so far as known the Sanford lake deposits are the only ones of economic size. These deposits have fairly well proved 70,000,000 to 100,000,000 tons of crude ore with a possibility of 180,000,000 tons additional. This ore can be separated to yield concentrates with 56 to 60 per cent iron, 3 to 7 per cent titanium and 0.004 per cent phosphorus.

The remaining area, 8500 square miles, is composed mainly of gray gneisses probably of sedimentary origin and probably belonging to the Grenville series of white limestones, known sedimentaries. The total area of more or less productive mines covers about 250 square miles. This area is divided into six distinct sections, the Crown Point, Mineville, Ausable, Saranac, Lyon Mountain, Benson mines and the Clifton group.

Abstract of a paper read before the American Iron and Steel institute, New York, May 26. The author is consulting geologist, Witherbee, Sherman & Co., New York.

Three Companies Operating

There are at present three operating companies: Witherbee, Sherman & Co., the Port Henry Iron Ore Co., Mineville section, and the Chateaugay Ore & Iron Co., Lyon Mountain section. These three companies are equipped to turn out 1,500,000 tons of concentrates yearly with 61 to 68 per cent iron and 0.2 to 0.004 per cent phosphorus. At least 750,000 tons of this output will be 61 to 65 per cent iron; phosphorus, 0.01 to 0.004 per cent. If the market would absorb it the output of finished product could be brought up to at least 3,000,000 tons within two years.

The following sets forth what actually is known regarding tonnages in developed areas and the prospective tonnages, based on structural lines:

District	Known tonnage	Prospective tonnage	Total tonnage
Crown Point	3,000,000	10,000,000	13,000,000
Mineville ..	32,000,000	300,000,000	332,000,000
Lyon Mountain and Saranac .	50,000,000	700,000,000	750,000,000
Ausable ..	25,000,000	300,000,000	325,000,000
Benson ...	6,000,000	60,000,000	66,000,000
Sanford ...	70,000,000	180,000,000	250,000,000
Totals...	186,000,000	1,550,000,000	1,736,000,000

Keeping within limits proved by working faces and diamond drill holes, there is clearly indicated in the Mineville area alone a horizontal area of 720,000,000 cubic feet of ore. In a continuation of this zone, not so well proved, there are reasons for estimating 288,000,000 cubic feet additional, a total of 1,008,000,000 cubic feet. Men of wide experience in operating magnetic iron ore mines have stated they have never yet seen one of the mines "bottomed", that is, exhausted. Of course, such mines must have an end, but in the light of experience, who can fix the limit?

In the Mineville section there are

MAGNETIC SEPARATING PLANT, CHATEAUGAY ORE & IRON CO., LYON MOUNTAIN, N. Y. THE PLANT HAS A CAPACITY FOR HANDLING 1500 TONS OF CRUDE ORE DAILY. THE MINE SHAFT IS 1600 FEET DEEP

VIEW OF THE CHATEAUGAY COMPANY'S SINTERING PLANT SHOWING THE DE-DUSTING FANS

at least 10 groups of old mines, not now in operation, which have produced considerable tonnages; 15 in the Ausable section; four in the Benson mine section; about six in the Saranac and six in the Lyon Mountain section, one of which is in operation.

In the early days of the iron industry only rich ores, 50 per cent iron or more, could be used and these were very limited. The lean ores, formerly passed by iron miners as impossible, today form the backbone of Adirondack iron ore production, as they undoubtedly will in the future. The Adirondack iron ores possess a characteristic which no other iron ores possess; they are chemically pure; even the leanest can be raised by magnetic concentration to as high as the theoretical limit of iron in the mineral, 72.4 per cent.

There are two distinct types of magnetic iron ores in the Adirondack area; titaniferous and nontitaniferous. The titaniferous iron ores contain titanium in the form of ilmenite up to 17 per cent or even more. They are found exclusively in an eruptive gabbro. They are masses segregated from the gabbro. Out of dozens of prospects only the Sanford lake deposits are of sufficient volume to warrant attempts to utilize them. Milling tests show that these ores can be milled to concentrates carrying 3 per cent titanium and iron up to 64 per cent with phosphorus 0.004 per cent. Successful milling, in the elimination of titanium, however, depends wholly on the physical structure of the ore. Coarse, granular ores yield in milling a high iron product with 0.5 to 3 per cent of titanium. Dense, fine grained ores, in milling, may eliminate only the nonmagnetic gangue. In ores of this latter class the mineral is a mechanical mixture of fine grains of the minerals ilmenite and magnetite or crystalline intergrowth. They cannot in this case be broken apart even at 100 mesh.

The straight or nontitaniferous magnetite ores occur in well foliated gneisses. The ore bodies do not occur in isolated masses but in extensive sheet-like forms. There are approximately 9000 square miles of the iron ore bearing gray gneisses in the Adirondacks. In this field the area covered by the seven more or less operated districts totals about 250 square miles, approximately 3 per cent. In this 3 per cent of the total area all known ore bodies outcrop. Whether the 8750 remaining square miles contain "blind" deposits is not known. It is likely that they exist. Long before the 186,000,000 tons of assured ore is exhausted, the question probably will be answered.

The "gray gneiss" ores, nontitaniferous, in sight and prospective, amount to 1,500,000,000 tons. The magnetite in the ores is practically chemically pure, containing the theoretical limit of 72.4 per cent metallic iron. The crude ores are granular and friable. This makes for high-grade milling, since in crushing the magnetite and gangue may be broken completely apart. The concentrates are a high-grade product. In present every day practice crude ores with a total of 25 per cent iron yield concentrates up to 68 per cent iron, with phosphorus 0.01 to 0.004 per cent. Experiments show that from 15 to 30 per cent crude iron units, crushed to 73 per cent through 60 mesh, yield concentrates as high as 70 per cent iron and 0.004 per cent phosphorus, with 92 to 96 per cent recovery of the total crude iron units.

The gray gneiss ores will have an average concentration ratio of 2.4 to 1.63 per cent iron concentrates. The yield of concentrates on this basis will be 625,000,000 tons. This is equivalent to an annual production of 6,250,000 tons annually for 100 years.

The 116,000,000 known tons of gray gneiss ores will yield, on the same basis, a total of 48,340,000 tons, equivalent to a production of 1,500,000 tons of concentrates yearly for 32 years. This is approximately the yearly production during fair business periods. Compared with the Lake Superior ores of 51.5 to 55 per cent, ton for ton, the Adirondack concentrates will contain 12 to 18 per cent more iron. The unit freight cost is thus about 86 per cent of the unit freight cost of the lake ores.

Based on sintered Adirondack concentrates there is at present quoted prices a differential of about 33 per cent in favor of lake ores. The writer can see no warrant for this differential.

In 1916 the American Iron and Steel institute published a paper by Frank S. Witherbee, president of Witherbee, Sherman & Co. on "The Iron Ores of the Adirondack Region." Mr. Witherbee, said: "The Adirondack field promises when developed to produce 5,000,000 tons of concentrates annually for over 100 years." In the writer's opinion this estimate is conservative.

There is apparently in the Mineville, Ausable and Lyon Mountain districts an unestimated tonnage of ore or rock carrying not less than 15 per cent iron. This can be quarried and delivered to a mill at a cost not to exceed 50 cents a ton. With milling costs at 35 cents the total cost per ton, crude, would be 85 cents.

About 1885, as Mr. Witherbee stated, magnetite constituted about 35 per cent of the total iron ore produced in the United States. Today it is about 3 per cent. In 1916 the production of the Lake Superior region was 66,658,466 tons. Personally, the writer knows that the general idea which is prevalent is that the Adirondack iron ore field is very limited, and the volume of production irregular and not to be depended upon for any length of time. With this feeling dominant, iron and steel manufacturers naturally turn to a source of supply officially estimated

billions of tons in preference to what regarded as a limited and irregular ource, especially with a prejudice gainst magnetites. However, the riter is thoroughly convinced of the llowing:

First, the iron ore reserves of the dirondack region are not less than ,500,000,000 tons. Second, that on a asis of a concentration ratio of 2.5 o 1, these reserves will produce not ess than 600,000,000 tons of 61 to 65 er cent concentrates of bessemer grade n phosphorus of which probably 300,-00,000 tons would be "special low phosphorus." Third, unit for unit, these concentrates can be marketed on even erms, at some point not far east of Buffalo, with the best of the lake ores.

One point of comparison between lake ores and Adirondack concentrates pertains to the unit cost of iron in freight charges. A 51.5 per cent iron, nonbessemer lake ore has 18.5 per cent less iron than an Adirondack ore of 61 per cent. In the Adirondack ore of 61 per cent there is 84.2 per cent magnetite and 15.7 per cent gangue. The lake ore of 51.5 per cent iron (hematite) has 73.5 per cent hematite (Fe_2O^3) and 26.5 per cent gangue. The rail freight per ton mile is assumed to be 1 cent or $1 per hundred miles. The 100 mile rate per unit of iron on lake hematite is thus 1.36 cents; a similar condition with Adirondack concentrates, as magnetite (Fe^3O_4), would be 1.189 cents per unit of iron. That is, the freight per unit of iron of Adirondack concentrates is only 87.4 per cent of that of the 51.5 per cent ores from the Lake Superior district.

SINTERING PLANT, CHATEAUGAY ORE & IRON CO., HAVING A CAPACITY OF 450 TONS DAILY

On a freight charge basis alone there is a neutral point between Buffalo and New York city where competition between nonbessemer lake ores and Adirondack concentrates would apparently meet on even terms.

Using Electric Cranes in Foundries

BY A. H. McDOUGALL

OPERATION of a foundry largely is a problem of handling material. The method by which it is accomplished affects the cost of the finished product. From the time pig iron, scrap, coke, sand and crushed stone, arrive in the foundry yard until the finished product is delivered to the shipping platform a continuous process of raising and moving material is taking place. Of all the machinery and appliances used in foundries electric traveling cranes effect the greatest saving in the cost of operation. This is due to the fact that an electric crane has three motions, making every square foot under the runway accessible to crane service.

Handling of the raw materials in the yard, which may be either an open yard or a covered material bay. This is somewhat dependent upon prevailing climatic conditions. The storage yard should be served by a 10-ton crane having a span of about 75 feet. The trolley should be designed to operate a clam-shell bucket for unloading coke and sand and loading foundry refuse, and an electric magnet for unloading pig iron and scrap. The magnet also should be used for handling a drop weight for breaking up scrap. If a new foundry is being planned, the charging floor should be layed out so it also can be served by the crane. However, this is only recommended for emergency use in case of a temporary shutdown of the elevators, which normally should be depended upon to take all material to the charging floor.

The operating speeds of the crane in feet per minute should be: Bridge travel, 300; hoist, full load, 30; trolley travel, 125 to 150.

The trolley should be built so the magnet and bucket drums are independent of each other and are operated by separate motors and controllers. The operator's cage should be closed and arranged so as to be well lighted and heated.

However, in a large degree such a crane can be replaced in smaller foundries by a standard 3-motor yard crane equipped with a magnet winding drum for handling the magnet cable so an electric magnet can be used. The magnet can be removed readily and a single line grab bucket attached. This plan works out well, except that some time is lost in making the change.

To estimate the amount of horsepower required to operate a crane at the speeds specified the travel of the bridge should be considered first. Add the weight of the crane in tons to the weight of the maximum load and multiply this sum by the tractive effort of the wheels which may be assumed to be 60 pounds per ton. The result then should be muliplied by the speed in feet per minute, and this will give the number of foot pounds required. Foot pounds are converted to horsepower by dividing by 33,000. The horsepower required to rack the trolley is obtained in the same way except that 40 pounds per ton instead of 60 is used as horsepower required for hoisting. It is the tractive effort. In determining the horsepower for hoisting, it is safe to allow 1 horsepower for hoisting 1 ton 10 feet per minute. These data make it easy to check up the power supply and to establish the peak loads. As a general proposition not more than two operations are effective at one time.

In the main molding bay of a foundry having a daily output of from 30 to

From a paper presented at the meeting of the American Foundrymen's association held at Rochester, N. Y., June 5-9, 1922. The author is with the Whiting Corp., Harvey, Ill.

40 tons per day, should have a crane span of not less than 60 feet. The span often is made too short, or the molding bay is too narrow. The main crane for heavy molding, pouring, and shaking out should have a capacity of not less than 15 tons, and should be motored to provide a bridge travel speed of 300 feet per minute, a full-load hoisting speed of 25 feet per minute, and a trolley travel of 125 to 150 feet per minute. These speeds are for full load. A 10 and a 5-ton crane having high operating speeds should be installed on the same runway. The trolleys for these cranes should be so designed that all the gears are enclosed in dust-proof cases and run in oil. This not only will increase the life of the mechanism but will conform to all safety requirements. The design also should be such that every part is accessible readily for maintenance and the parts are easy to handle.

Traveling electric wall cranes sometimes are used, but it must be remembered that they impose severe strains on the building columns, necessitating expensive steel construction to overcome the reactions. Because of the limited area of molding floor served by wall cranes, the work is more efficiently accomplished by the high speed, electric traveling cranes.

In foundry service it has been found that all things considered, alternating current is much more applicable than direct current. The alternating current slip-ring motors operate in the dusty atmosphere of a foundry with little or no attention aside from lubrication, whereas under the same conditions, direct current motors, because of the commutator, have to be given at least weekly attention. This necessitates taking out the armature and truing up the commutator by expensive maintenance men, generally at an overtime rate.

Creeping Speed Control

Manufacturers now have developed for foundry service the creeping speed control which gives 90 per cent control on the first point, and has not the disadvantage of accelerating on light loads and injuring delicate molds. The two-torque, or double load also has been developed which is proving more satisfactory for speed and control in foundry service than dynamic braking. However, all cranes handling hot metal should be equipped with dependable mechanical load brakes with a solenoid brake on the hoist motor, as the action of the mechanical brake always is positive and the element of possible chance of failure of the dynamic brake is absent. Cranes of short span and light capacity should be installed in the side bays and core rooms. These should be floor operated, for ready use by the molder and helper.

In foundries where the buildings or output will not permit of the installation of electric traveling cranes, jib cranes of both the electric and hand-power type can be used with economy. An electric jib crane can be installed at the cupola for molding and pouring even the heaviest work. A top-braced jib crane can be used to advantage in the yard for unloading and breaking scrap for loading finished castings.

For foundries operating on light work as stove plate, agricultural castings, etc., an overhead trolley system has been developed on which a right-angle turn can be made in a space of 18 inches. These systems are invaluable for distributing flasks and supplies, delivering molten metal, collecting castings from the floors and delivering them to the cleaning room, and for serving the brass furnaces when situated in a corner of the main foundry. With this system a small room can be served, the trolley passing out and in the door on the track. Such systems should be provided with positive switches and turntables that embody all safety features. The trolley must be of high-grade design and material, with ball bearing axles so they will travel easily by pushing or pulling on the load.

Uses Demand Attachment on Watt-hour Meter

For small power installations, with which the indicating-type of demand meter is satisfactory, a demand attachment for use with one of its standard type polyphase watt-hour meter is being manufactured by the Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa. The attachment is a watt-hour meter register which combines the regulator watt-hour meter register with the scale and pointers of an indicating demand meter. By replacing the register and cover of the standard polyphase watt-hour meter with this attachment and a special cover, the meter is converted into an indicating block-interval meter, which will indicate the maximum kilowatt demand and the integrated kilowatt hours with a negligible lapse of time between the measurement of adjacent blocks.

The demand attachment has two pointers, one white and the other black. The white pointer advances the maximum demand black pointer to any maximum demand position on the demand scale, where it is held by friction while the white one returns to zero at the end of each time interval. By watching the movement of the white pointer, which shows an integrated and not an instantaneous demand, the duration of the demand interval can be checked as well as the demand at the time of reading the meter.

After the gears driving the white pointer have been disengaged from the gear train of the watt-hour meter, the pointer is returned by gravity to zero. The time at which the gears are disengaged, and therefore the time interval of the attachment, is determined by an induction motor. The motor has practically a constant speed over a voltage range varying from 90 to 110 per cent of the rated voltage, which permits the calibration of a meter in the laboratory and its installation on a line with a voltage variation of several per cent from the calibration voltage with no appreciable error in the length of the time interval of the demand meter. The demand scale, which is 3¼ inches long, is marked directly in kilowatts demand, but the watt-hour dials are used with the register constant of 10 or multiples of 10.

Completes Study of Iron and Carbon Alloys

Experimental work on an investigation of the magnetic properties of a series of pure alloys of iron and carbon recently has been completed by the bureau of standards, Washington. A number of alloys were prepared having carbon contents ranging from 0.018 to 1.60 per cent and containing no impurities in sufficient amounts to be of importance. Normal induction and hysteresis data were obtained for magnetizing forces up to 2500 gilberts per centimeter and the results correlated not only with the carbon content but also with heat treatment. The reluctivity relationship previously used in a study of carbon steel with eutectoid composition was found to be useful in correlating the results. A paper describing the results of this investigation is in preparation.

Gogebic Mine Taxes Cut

Mining properties of Gogebic county, comprising most of the Gogebic range in Michigan are valued this year for taxation purposes at $48,926,418, as compared with $47,915,266 in 1921. In the city of Ironwood the reduction is from $19,013,677 to $18,574,130. In Ironwood the state tax commission reduced the valuation of the Norrie group of mines of the Oliver Iron Mining Co. about $400,000. Reductions are said by state officials to have been due principally to the failure of ore companies to conduct exploratory work to find new bodies of ore. Ore companies say little work is being done owing to the fact that a prohibitory tax is assessed.

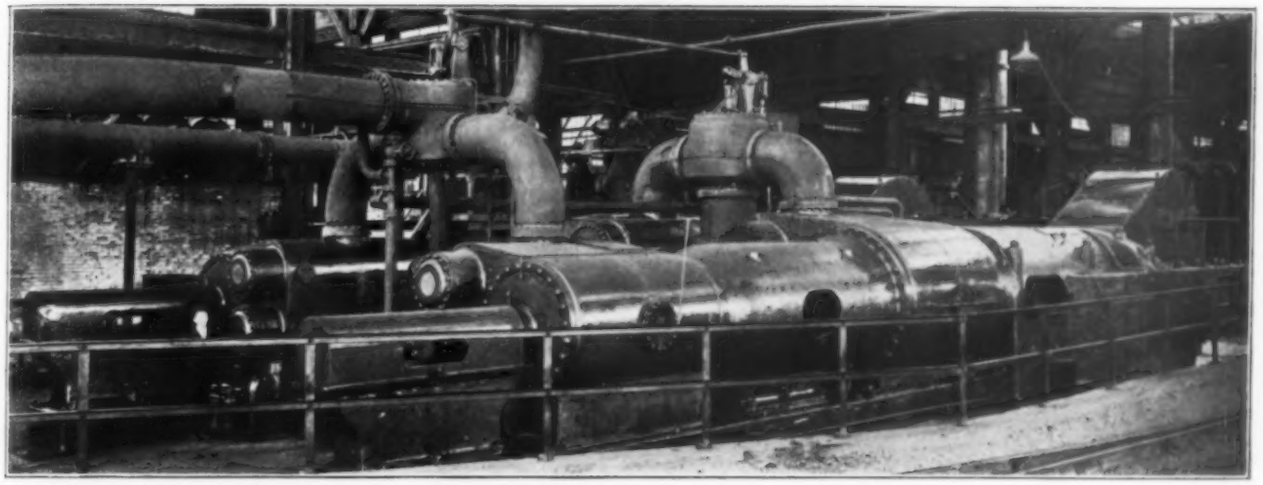


Fig. 1—Twin tandem compound reversing mill engines of 15,000-horsepower driving 48-inch, 2-high, 2-stand structural mill at the Saucon plant of the Bethlehem Steel Co. The oxyacetylene blowpipe was used to remove 60,000 pounds of metal from their counterbalances

Removes Cast Steel by Blowtorch

Oxyacetylene Process Is Used To Cut 30 Tons of Metal from Counterbalances of Engines Driving 48-Inch Reversing Structural Mill—Units Re-assembled and Operating Within Four Days

AN UNUSUAL application of the oxyacetylene metal cutting process was the recent removal of 60,000 pounds of metal from the counterbalances of the engines driving the 48-inch structural mill at the Saucon plant of the Bethlehem Steel Co. A view of the mill is shown in Fig. 1. The work, which was done several months ago, was entirely successful, and the mill since has been in continuous operation. The removal of the counterweights from the crankshaft and the reduction of their weight by the usual machine methods would have meant a prolonged shutdown of the entire rolling mill, and the substitution of new counterweights of the proper weight would have proved equally expensive. Either method of procedure would have entailed a loss of several weeks' production and this the Bethlehem company desired to avoid in view of the fact that the products of the mill were in constant demand.

The problem was complicated further by the fact that the crankshaft assembly, including the two counterweights, weighed 85 tons, more than double the lifting capacity of the overhead crane in the engine bay, and there were no mechanical means for re-

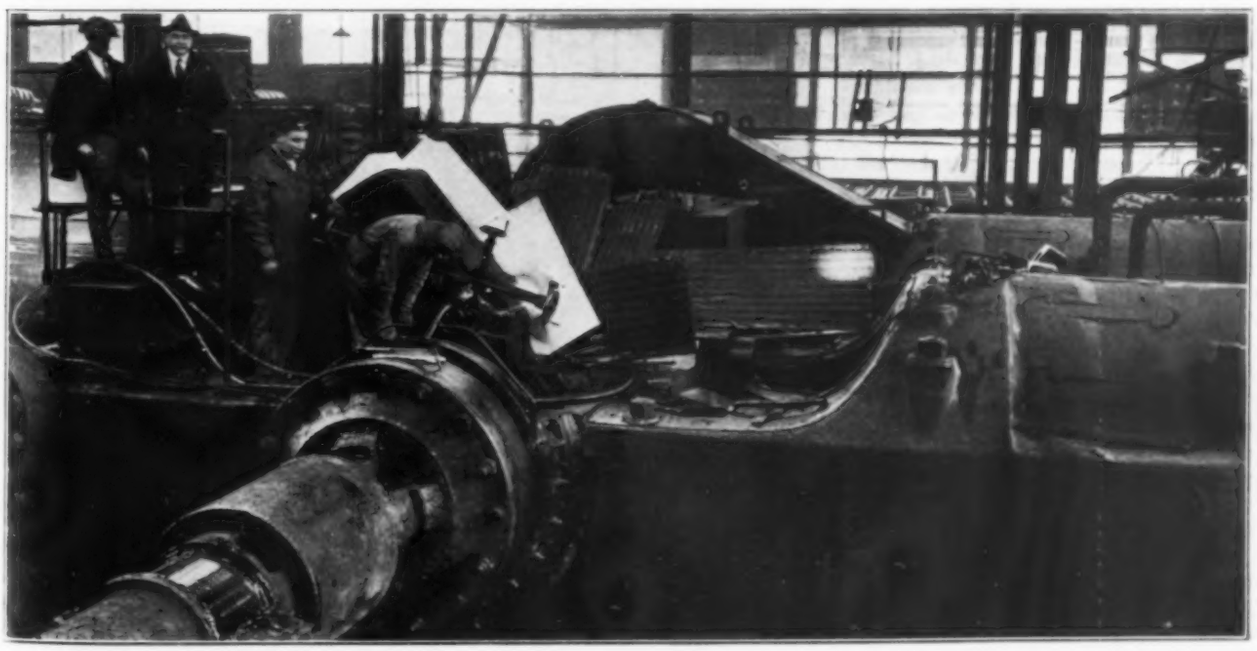


FIG. 2—STARTING THE FIRST CUT. TO PROTECT THE ENGINE PARTS FROM HEAT OF THE FLAME, ADJACENT PARTS WERE COVERED BY CORRUGATED SHEETS AND ASBESTOS

FIG. 3—EIGHT SECTIONS, 18 X 22 INCHES, AND WEIGHING 7500 POUNDS EACH WERE REMOVED FROM THE TWO COUNTERBALANCES

moving the surplus metal from the counterweights in place, unless it should prove practicable to use the oxy-acetylene blowpipe. At the time, the Bethlehem company was not certain whether this method was practicable in this particular case, but after an assurance from the Oxweld-Acetylene Co., New York, it was decided to proceed along this line. The work was conducted under the supervision of one of the latter company's local representatives.

The two cast-steel counterweights, each 18 inches thick and in form approximating a 90-degree section of a 12-foot circle, were fitted to a forged steel crankshaft having 28-inch bearings. Between the counterweights was a 19-inch space through which swept a connecting rod bearing on the crankshaft. The counterweights had been machined to fit over a 3-inch shoulder on the crankshaft and were shrunk on after they had been slipped over the ends of the shaft at the time of the original assembly. They were further secured in position by two 4½-inch tap bolts that were passed through the counterweights and screwed into the crankshaft. These bolts had been heated when they were put in and it was almost impossible to remove them. Because of the limited working space, it was necessary to exercise the utmost care to avoid damaging the other parts of the engine. For this reason the entire job was carefully planned to the last detail before the actual cutting was begun.

Such preliminary preparation as was possible was made before the closing down of the mill. All exposed parts of the engine were covered by sheet iron and asbestos sheets, as shown in Fig. 2, to fend off the sparks and several lines of water hose were brought to the work not only for cooling overheated parts but to afford protection against fire in case the oil in the machinery should become ignited. In connection with the fire hazard, the work had to be done from the top of the engine frame, and inasmuch as the crankshaft bearings were directly beneath the cutting area and in direct line with the droppings of molten slag, it was necessary to exercise extra care.

After shutting down the mill, 12 hours were required to remove the counterweight coverings, bearing caps and other parts down to the pillow blocks. The oil reservoirs were drained and packed. The counterweights were then revolved by means of the overhead crane so as to bring the line of cut to a level above the pillow blocks, after which the crossheads were blocked to prevent the engine from turning over. These steps were necessary in order to determine the cutting procedure, as the length and depth of the cuts were operating factors which had to be calculated with accuracy. As finally adopted, the plan provided for two cuts on each of the four counterbalances. Owing to the necessity for doing the cutting in place, the cutting jet had to be held in a horizontal plane. The initial cut of 82 inches is shown in Fig. 3. Near its center, the line of cut included a curve, a feature of the operation that caused some difficulty. During the progress of the cut, two 12-inch cast-steel jaws were left gripping the crankshaft in a shrunk fit, making some provision nceessary to prevent the jaws from overheating or opening up and breaking off.

To make the best time possible and to secure a smooth, regular kerf, it was decided to use a machine-type cutting blowpipe in conjunction with a straight-line cutting machine. It was necessary to mount this machine on the counterweights themselves and owing to the limited working space, the best results were obtained by fastening the machine upside down, securing it with tap bolts to the part of the counterweights where the cut was to be made. The machine had to be set twice for each 82 inches of cutting in order to include the curve previously noted. The effect of these changes was to extend materially the time nec-

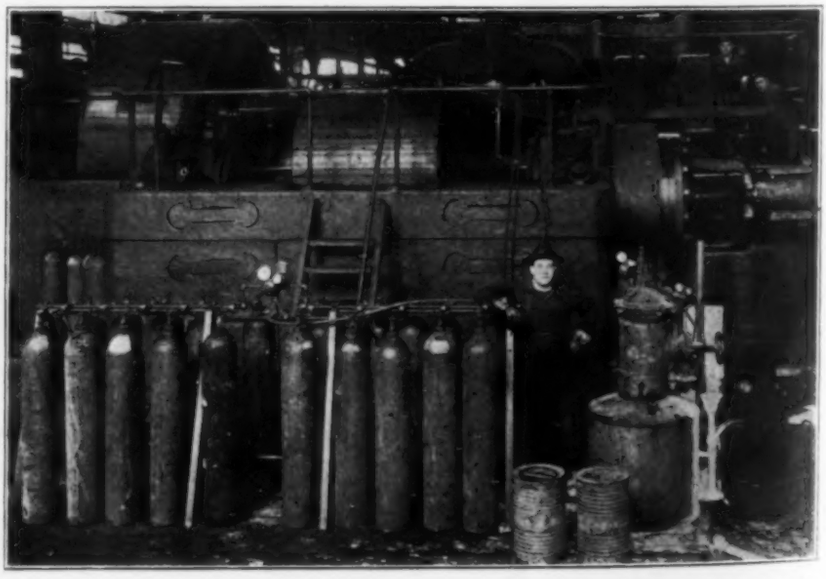


FIG. 4—A 20-CYLINDER OXYGEN MANIFOLD WAS USED TO INSURE A CONSTANT OXYGEN SUPPLY, FULL CYLINDERS BEING CUT IN AS NEEDED. ACETYLENE WAS FURNISHED BY A PORTABLE GENERATOR OF 50 POUNDS CARBIDE CAPACITY

cary for performing the entire work.

The first delays were occasioned by the accumulation of hot slag, despite the fact that streams of cold water were being continually played on the crankshaft bearings and block. Many blowholes and sand pockets in the counterweights further retarded the cutting and made starting doubly difficult following every interruption. When the cut was nearly finished, wedges were forced into the open end and a "tack" was left to prevent the block from slipping forward. Holes for billet tongs were burned into the sides of the block with a hand-operated, cutting blowpipe. The overhead crane then put on a hoisting strain and the block, weighing 7500 pounds, was completely severed and lifted away.

The second cut, on the exposed side of the companion counterweight, was finished on the same day, with the crankshaft in the same position in which it was placed for the initial cut. On the second day, the counterweights were reversed and the third and fourth cuts were made in a similar manner. The mill engineers began reassembling the first engine on the same afternoon and the counterweights on the second engine thereupon were cut in the same way as those on the first. Both engines were in operation in four days after they had been shut down. Mill operations had been suspended for a period of 78 mill hours only, and during that time, 60,000 pounds of surplus metal had been removed from the two engines.

The best actual cutting time for a complete step of the operation was 50 minutes in cutting 82 inches. This particular cut consumed 1160 cubic feet of oxygen. The total oxygen consumed for all eight cuts amounted to 14,500 cubic feet. The acetylene was provided by a generator shown in Fig. 4 and the total consumption of this gas was 1400 cubic feet. The cuts were so smoothly and accurately made that no refinishing was necessary. The general appearance of the cuts was equal to that of the average cold-saw cut. The closest examination revealed no shrinkage cracks and the shrunk fits were in good condition. The bearings had undergone no injury owing to the fact that they had been carefully covered to protect them from heat and slag. Since then the engines have driven the 48-inch mill continuously and the job is regarded as having been entirely successful.

Due to decrease in price and falling demand the value of aluminum produced in the United States dropped from $41,375,000 in 1920 to $10,906,000 in 1921. Imports of semimanufactured aluminum in 1921 totaled $32,665,300 against $39,298,650 in 1920, the United States geological survey reports. Exports of aluminum in 1921 were 2,196,000 pounds and in 1920, 9,407,650. Bauxite produced in the United States in 1921 totaled 139,550 tons while consumption was 161,195 tons.

Cost of Living Unchanged in Month

Practically no change in the cost of living is noted in the last monthly report issued by the National Industrial Conference board, New York. Between March 15 and April 15, 1922 there was an increase of less than one-tenth of 1 per cent. The only change in the entire budget within the month was an increase of 0.7 per cent in clothing prices, which had an insignificant effect on the budget as a whole. The cost of living among wage-earners' families on April 15 was 54.8 per cent higher than in July, 1914.

Foundrymen's Handbook; cloth, 309 pages, 6 x 9 inches; published by the Penton Publishing Co., Cleveland, and furnished by THE IRON TRADE REVIEW for $5, postpaid.

As its name implies, the *Foundrymen's Handbook* is a ready reference work of classified information of the gray iron, steel, malleable iron and nonferrous metal branches of the casting industry. The data contained therein is equally valuable to the patternmaker, to the foundry executive and to the progressive foundry operative who is ambitious to advance himself in his vocation. This handbook constitutes the first compilation of selected foundry data to be offered to the industry and represents a search for material extending over a period of about 12 years. Much of the information contained in this handbook previously has appeared in the data sheets which constitute so valuable a feature of every issue of *The Foundry*. However, before compilation in permanent form these data sheets have been revised to accord with the latest and best practice and the specifications have been checked to May 1 this year. The *Foundrymen's Handbook* treats of more than 300 subjects, including specifications relating to foundry practice, tables, etc. Accurate information will be found therein that will aid in solving the many problems that daily confront every casting manufacturer.

This handbook is divided into six general sections into which the subjects have been classified and which facilitate reference. Miscellaneous foundry data are contained in the first section, which, for example, includes useful formulas for facing mixtures, data regarding refractories coatings for steel cores, cupola operation chimney design, methods for estimating the tonnage of pig iron in piles, of coke in bins, etc. When making estimates on the prices of castings, one of the most perplexing problems involved is ascertaining their weights and one entire chapter is devoted to methods for making such computations. Many tables are included and details are given which will enable the estimator to ascertain the weigh of a casting in any foundry metal and regardless of its shape. Nor has the patternmaker been overlooked. One entire section is devoted to this branch of the foundry industry, which includes tables, standards, methods of computation and general information relating to pattern shop practice.

For the manufacturer of nonferrous metal castings a careful selection of alloys in general use has been included in this handbook and methods of mixing and melting are given, as well as characteristics and physical properties of these alloys. In recent years manufacturers and testing engineers have evinced increased interest in specifications for the casting industry and standards for gray iron castings, cast iron pipe, locomotive cylinders scrap metal, etc., are included. The handbook concludes with a series of miscellaneous tables, including gross tons in pounds, decimal parts of a gross ton, net and gross ton equivalents, weights of a square foot of various metals, table for changing Centigrade to Fahrenheit, weight of steel in pounds, table for converting millimeters to inches, etc. For a work of this kind the index is an essential feature and in the *Foundrymen's Handbook* this is unusually complete with direct and cross references. The handbook should constitute a part of the library of all affiliated with any branch of the foundry industry, as it will prove of inestimable value in obtaining quickly information heretofore to be had only from widely scattered sources.

ACCURATE TEMPERATURE READINGS ARE MADE POSSIBLE WITH THIS DIRECT READING INSTRUMENT

Develops Simple Direct Reading Thermometer

A recent development of the Brown Instrument Co., Philadelphia, is the perfection of a direct-reading, resistance thermometer. The advantage claimed for this type of instrument is that by installing an instrument for a specified temperature range, for instance, the range through which the temperature will vary, each division can be made to represent one degree and thereby give accurate readings. The instrument as shown in the accompanying illustration, has a scale graduated directly in temperature degrees between minus 10 and 110 degrees Fahr.

The fundamental principle of the resistance thermometer is that metals show change in resistance with change in temperature. This change in resistance can be measured accurately and a scale calibrated in temperature degrees. A bulb or a coil of wire is used to register the change in resistance. Through means of a switch, the instrument can be connected to any number of resistance thermometer bulbs installed in different locations. Provision is made to check the instrument for a zero reading, a check which is recommended daily.

Necking Appliance Placed on Automatic Lathe

For use with its full automatic lathe, the Pratt & Whitney Co., Hartford, Conn., recently has designed a necking attachment. This appliance, which is shown in the accompanying illustration, is provided for the purpose of squaring shoulders or necking below the turned surfaces of work for grinding or for any other operation where a cross feed can be utilized. The attachment consists of multiple carriages to replace the regular carriage of the lathe, one, two or three of these carriages being adjustably clamped to the front way of the bed. These carriages carry regular tool slides and provision is made for multiple tool posts. Adjustment for depth of cut is made by the hand wheels shown mounted on screws with graduated dials reading in thousandths of an inch.

Through the medium of roll carrying arms the cross slides are actuated by the adjustable cams mounted on a cam carrier and reciprocated longitudinally by the main feed cam of the machine. These cams can be adjusted to provide any sequence of the cross movements or all slides may be moved in unison depending upon the nature of the work.

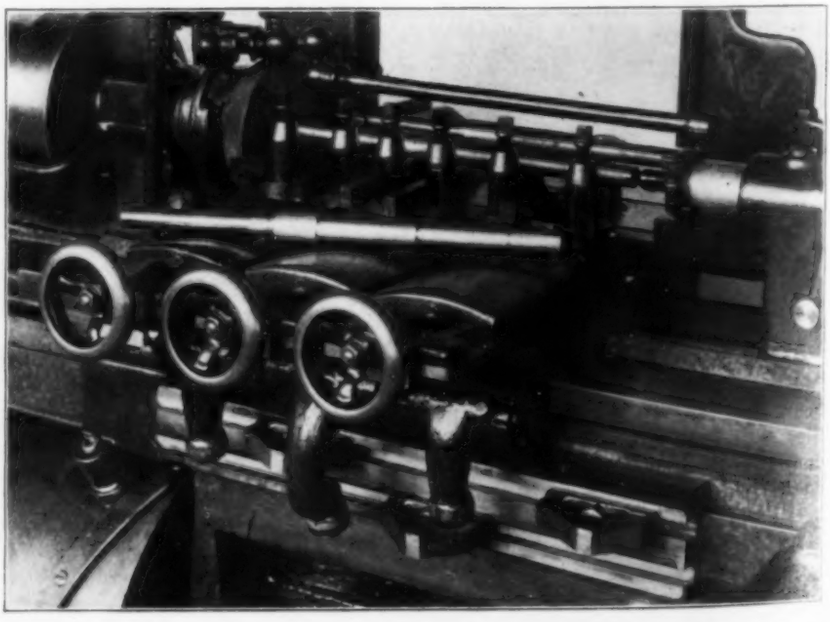
THE PURPOSE OF THIS HEAD IS TO LIMIT THE SWEEP OF THE SOOT CLEANING ELEMENT

Suitable oil distribution is provided and all of the automatic functions of the lathe are retained. The attachment is readily removable to permit the regular carriage with its actuating parts being replaced.

Ratchet Head Facilitates Blowing Out Soot

To limit automatically the sweep of the soot cleaning element and hence to insure that the steam jets have an opportunity to thoroughly clean every part of boiler tube surfaces, the Vulcan Soot Cleaner Co., DuBois, Pa., has introduced the device which allows only proper use of the cleaning element. When cleaners are rotated too rapidly or carelessly through only the fraction of the total sweep of the element, the steam jets are not given sufficient time to clean tube surfaces. The new device which is shown in the accompanying illustration, is so constructed that when the operator pulls the chain the element is rotated only a short distance and can be turned no farther until the ratchet frame has been returned to its original position. Then a pulley on the chain causes the element to rotate another space.

Between the lulls in operating the new head, the steam jets have an opportunity to concentrate upon a definite section of the tube surface for a time sufficient to insure removal of the soot. When the complete arc of rotation has been attained in one direction by means of stops specially set for the purpose, the mechanism automatically reverses itself and the cleaning element moves back in the same manner through the same arc. Any soot that may have redeposited after the first rotation is removed on the backward travel.



A FRONT VIEW OF THE NEW NECKING ATTACHMENT WITH A SPECIMEN OF WORK LAID ACROSS IT

Book Tin Plate for Japan

American Mills Awarded 56,000 Boxes at Higher Figure Than British Makers, on Basis of Quality—Foreign Inquiry Tapering Off

NEW YORK, June 6.—Developments of the past week strengthen the belief that foreign interest in American iron and steel products is being curtailed by higher prices. Concurrently with the firming of prices here there has been a weakening in most foreign markets. Reports of European tenders winning over American bids are becoming more numerous. Some orders are being placed in this country on a quality basis despite lower offers from other countries.

Ocean Freight Rates

New York to	Pig iron billets, etc.	Steel bars, etc.	Plain wire in coils etc.	Tin plate
Liverpool	$7.00	$7.00	$9.00	$9.00
London	7.00	7.00	9.00	9.00
Christiana	6.00	7.00	8.00	8.00
Copenhagen	6.00	7.00	8.00	8.00
Hamburg	4.00	5.00	7.00	7.00
Bremen	4.00	5.00	7.00	7.00
Rotterdam	3.50	4.50	6.50	6.50
Antwerp	3.50	4.50	6.50	6.50
Havre	8.00	8.00	9.00	10.00
Bordeaux	8.00	8.00	9.00	10.00
Barcelona	8.00	8.00	15.00	8.00
Lisbon	8.00	8.00	15.00	8.00
Marseilles	6.00	6.00	10.00	6.00
Genoa	6.00	9.00	12.00	8.00
Naples	6.00	9.00	12.00	8.00
Constantinople	12.00	12.00	12.00	12.00
Alexandria	12.00	12.00	12.00	12.00
Algiers	12.00	12.00	12.00	12.00
Dakar	10.00	10.00	10.00	10.00
Capetown	12.50	12.50	12.50	20.00
†Buenos Aires	8.00	8.00	8.00	8.00
‡Havana	.20	.20	.20	.20
§Vera Cruz	.35	.35	.35	.35
Valparaiso	12.00	12.00	12.00	12.00
‡San Francisco	.60	.60	.60	.60
Sydney	11.50	11.50	11.50	14.50
Calcutta	18.00	18.00	18.00	18.00

Rio de Janeiro and Pernambuco—Open rates
†Landed.
‡Per 100 pounds, plus extra for wharfage.
§Per 100 pounds.

It has become apparent that South American demand for American iron and steel products, which was active for some weeks, is now being discouraged by higher prices. It is thought that the unsatisfactory and uncertain nature of European deliveries will prevent this business from being placed elsewhere.

The outstanding transaction of the week was the purchase of a considerable quantity of tin plate in this country for Japanese account. On a recent inquiry for 28,000 boxes, the Nippon Oil Co. accepted two American tenders, placing orders through two Japanese trading companies with two American mills. Through Mitsui & Co., 28,000 boxes of tin plate, 14 x 18¾-inch and 10 x 20-inch, were awarded to the Weirton Steel Co., and through Takata & Co. an equal quantity was placed with the United States Steel Products Co. July delivery is said to have been specified for each order. The prices involved are supposed to have been identical, and more than $4.25 base. Although the London office of Mitsui & Co. obtained tenders from English mills which were lower than the American prices, a representative of the company says the order came to the New York office on a basis of superiority and preferment for American goods.

A Japanese government order for 363 tons of bridge material was awarded to Suzuki & Co. and placed by them with the United States Steel Products Co. A smaller inquiry is said to be pending. A recent request is reported by a Japanese house for tenders on 8 miles of single track 60-pound relaying or rerolled rails, A. S. C. E. section, with corresponding track accessories and spikes, delivery at Yokohama or Kobe. The earliest delivery is wanted.

Two rail inquiries from private Japanese sources are reported pending, one for 50 miles of 60-pound rails and another for 48½ miles of 75-pound rails. Rumors are current, however, that Mitsui & Co. have secured the latter order and have placed it through their continental office with a German mill. A price of $44, c.i.f., is said to have been offered here on this business, and the German bid on a basis of comparison was said to be 10 per cent lower.

Locomotive inquiries which were pending for some time and on which orders recently were awarded to the Baldwin Locomotive Co. constitute the most conspicuous business done recently in South America. One order consisted of eight mountain type and one Pacific type locomotives for the Argentine state railways.

News of Societies

Past and Coming Meetings of National and Local Trade and Technical Organizations

AT THE bi-monthly meeting of the mechanical section, Engineers' Society of Western Pennsylvania, held in the Blue room, William Penn hotel, Tuesday, June 6, an address illustrated by lantern slides was delivered by W. C. Buell Jr., vice president, Buell-Scheib-Mueller, Inc., Pittsburgh. The subject was "Factors Affecting the Use of Air in Oil Burning, with a Comparison of Cost." Topics discussed included velocity, quantity of air required, inductive properties of primary air as applied to oil burning practice, comparison of blower types, comparative costs of air, air piping, etc.

* * *

Detroit Foundrymen Elect

Fred Erb, of the Packard Motor Car Co., has been elected president of the Detroit Foundrymen's association. Other officers chosen for the ensuing year are: K. C. Babo, Dodge Brothers Co., vice president; D. R. Hay, Murphy Iron Works, secretary; James G. Mendenhall, Detroit Foundry Co., treasurer. The following were chosen members of the executive board: S. Van Dalson, Robert Crawford, E. I. Chase, E. W. Pike, H. M. Lane, Chester Culver, manager of the employers association, and James O'Meara.

* * *

To Convene in Detroit

The national convention of the American Society of Heating and Ventilating Engineers and the fortieth annual convention of the Master Plumbers of the United States will be held in Detroit. The dates of the former are June 8 to 10, and the plumbers, 6 to 10. Among the technical papers to be read will be several on metal uses.

Convention Calendar

June 5-9—American Foundrymen's association annual convention and exhibition at Exposition park, Rochester, N. Y. C. E. Hoyt, Marquette building, 140 South Dearborn street, Chicago, is secretary.

June 19-22—American Institute of Chemical Engineers, summer meeting at the Clifton hotel, Niagara Falls, N. Y. J. C. Olsen, Polytechnic institute, Brooklyn, N. Y., is secretary.

June 20-24—Society of Automotive Engineers meeting at White Sulphur Springs, W. Va. C. F. Clarkson, Scarborough-on-the-Hudson, New York, is secretary.

June 26-July 1—American Society for Testing Materials, twenty-fifth annual meeting, Chalfonte-Haddon Hall hotel, Atlantic City, N. J. C. L. Warwick, 1315 Spruce street, Philadelphia, is secretary.

Three-Company Merger Arranged

Terms Agreed Upon Whereby Midvale Steel & Ordnance Co. Will Acquire Republic Iron & Steel Co. and Inland Steel Co.—North American Steel Co., New Corporation To Be Formed—May Include Other Companies

FORMAL acceptances by the officials of the Midvale Steel & Ordnance Co., the Republic Iron & Steel Co. and the Inland Steel Co. of the plant for a consolidation of these three interests formally was announced late on Thursday, June 1, by Thomas L. Chadbourne, counsel and intermediary in the merger. The three companies will be unified in the ownership of the Midvale Steel & Ordnance Co., whose name is expected to be changed to the North American Steel Co.

No details as to the personnel of the unified company were given out. Mr. Chadbourne's statement also did not announce the capitalization. Later, however, the financial details were disclosed in an examination of the leading individuals in the merger by Samuel Untermyer as counsel for the Lockwood committee that has been investigating the housing situation in New York. The witnesses examined on this subject were John A. Topping, A. C. Dinkey, Mr. Chadbourne, and Mortimer L. Schiff of Kuhn, Loeb & Co., bankers for the merger. These witnesses were questioned before the Lockwood committee on the theory that the merger might have an effect on prices to be charged on steel for building purposes in New York. At these hearings, it developed that although the 3-company merger has been decided, it eventually may grow into a larger consolidation.

The official statement covering the details of the merger is as follows:

"All existing obligations of the three companies are to be assumed by the unified company. Existing preferred and common stocks will be changed into preferred and common stocks of the unified company. The new preferred stock is to have a par value of $100 per share, is to be 7 per cent cumulative, and is to be redeemable at $115 per share and accrued dividends, and is to be convertible for twelve years into new common stock at the rate of five shares of new common for four shares of new preferred. The common stock is to be without par value.

"All assets of the three companies are to be owned by the unified company, except the Nicetown plant (the armor making ordnance and forging plant) of the Midvale Steel & Ordnance Co., which is to be transferred to a separate company with a capital of 500,000 shares without par value.

"Participation in the new stock will be as follows:

"Under the plan Midvale company stockholders are to receive 75 per cent in new common stock and 25 per cent in stock of the company formed to take over the Nicetown plant.

"Republic Iron & Steel preferred stockholders are to receive dividends in cash up to the date when the new preferred dividend begins to accrue, and 100 per cent in new preferred stock.

"Republic Iron & Steel Co., common stockholders are to receive 170 per cent in new common stock.

"Inland company stockholders are to receive 25 per cent in new preferred stock, which is to be purchased from them at $95 per share, and 70 per cent in new common stock.

"It is intended to provide $20,000,000 additional cash working capital by the sale of common stock.

"Negotiations are pending for the acquisition of other properties, but, irrespective of the outcome of these negotiations, Midvale, Republic Iron & Steel, and Inland propose to proceed with the plan.

"Messrs. Kuhn, Loeb & Co. have agreed to act as bankers for the plan."

The combined stock capitalization of the three companies is $180,175,175. This includes $30,000,000 common stock and $25,000,000 preferred stock of Republic Iron & Steel; $100,000,000 common stock of Midvale Steel & Ordnance; and $25,175,175 common stock of Inland Steel. Republic is the only one of the companies having any preferred outstanding. The capitalization of these companies compares with $139,000,000 brought into the Lackawanna-Bethlehem merger, and with $868,583,600 for the United States Steel Corp.

The aggregate funded debt of the companies in the new merger is $72,290,500. Of this sum Midvale has $53,525,500; Republic $13,474,000 and Inland $5,291,000.

Capacities Combined

BLAST FURNACES

	Number of stacks	Annual capacity, gross tons
Midvale	14	2,360,000
Republic	11	1,525,000
Inland	3	575,000
Total	28	4,460,000

STEEL WORKS

	Open-hearths	Converters	Annual capacity, tons ingots
Midvale	59	4	2,515,000
Republic	14	2	1,395,000
Inland	22	-	1,200,000
Total	95	6	5,110,000

FINISHING MILLS

MERCHANT BARS

	Number mills	Annual capacity, net tons
Midvale	11	420,000
Republic	14	640,000
Inland	3	135,000
Total merchant bars	28	1,175,000

PLATES

Midvale	8	715,000
Republic	1	120,000
Inland	1	200,000
Total plates	10	1,035,000

STRUCTURAL SHAPES

Midvale	2	410,000
Inland	1	100,000
Inland	1*	300,000
Total structural shapes	4	810,000

RAILS

Midvale	1	255,000
Inland	1*	300,000
Total rails	2	555,000

SHEETS

Inland	18	150,000
Republic	18	120,000
Total sheets	36	270,000

TUBES

Republic	6	230,000
Midvale	6†	15,000
Total tubes	12	245,000

MISCELLANEOUS

Wire rods (Midvale)	120,000
Forgings (Midvale)	70,000
Wheels (Midvale)	52,000
Axles (Midvale)	45,000
All other	130,000
Total	417,000

RECAPITULATION

Merchant bars	1,175,000
Plates	1,035,000
Structural shapes*	810,000
Rails*	555,000
Sheets	270,000
Tubes	245,000
Wire rods	120,000
Forgings	70,000
Wheels	52,000
Axles	45,000
Miscellaneous	130,000
Grand total finishing capacity	4,507,000

COKE OVENS

	Beehive	By-product	
Midvale	...	612	1,300,000
Republic	1656	143	1,758,000
Inland	...	130	600,000
Total	1656	885	3,658,000

*Combination rail and structural mill divided 300,000 tons rails, 300,000 tons shapes.
†Boiler tubes.

Companies Lake Vessel Tonnage is 142,000

The following summarizes the new combination's interests in steamships operated on the Great Lakes:

The Cambria Steel Co. holds 50 per cent of the stock of the Cambria Steamship Co., which owns two steamers with a combined tonnage capacity of 22,000 tons. Cambria has a 50 per cent interest in the Mahoning Steamship Co., which owns three vessels with a combined capacity of 30,000 tons. It owns all of the Johnstown Steamship Co., with six boats having a combined capacity of 65,000 tons; and also owns all of the Beaver Steamship Co., with two

eamers of a combined capacity of 000 tons.

The Republic company owns outright ree steamers with a combined carrying capacity of 21,500 tons, and the Inland Steel Co. owns outright two steamers, with a combined capacity of 20,000 tons.

The total carrying capacity represented by the three companys' interest in or ownership of the 18 lake vessels is 142,000 tons. The capacity of the ships, regardless of interest or ownership, is 177,500 tons. Eleven of the ships, or those owned by the Cambria Steamship Co., Mahoning Steamship Co. and Johnstown Steamship Co. are operated by M. A. Hanna & Co.

New Group Has Large Ore Holdings

RESERVES of iron ore of the Inland Steel Co., Midvale Steel & Ordnance Co., and the Republic Iron & Steel Co. amount to 109,000,000 tons, according to the report of mining engineers and geologists during the original negotiations for the proposed seven-company merger. The total does not include Midvale's interest in large deposits of low-grade ores in the eastern Mesabi district and in Cuba, or the Republic's interest in southern ores. Tabulated, the available reserves of the three companies are as follows:

	Tons
Inland Steel Co.	17,500,000
Midvale Steel & Ordnance Co.	53,500,000
Republic Iron & Steel Co.	38,000,000
Total	109,000,000

The Inland Steel Co. controls 12,500,000 tons of ore on the Mesabi range, comprising the Laura mine with 2,000,000 tons; one-half interest in the Dunwoody mine, 5,000,000 tons; and one-quarter interest in the Bennett mine, 5,000,000 tons. It controls the Armor No. 1 and 2 mines, Cuyuna range, having a total estimated at 5,000,000 tons.

The Midvale company owns the Penn Iron Mining Co. operating the Penn mine on the Menominee range, containing 2,500,000 tons of ore. It has a one-sixth interest in the Hanna Ore Mining Co. operating various properties in the Lake Superior district, which gives it control of 4,000,000 tons. A one-seventh interest in the Scranton mine, Mesabi range, and Plymouth mine, Gogebic range, is equivalent to 5,000,000 tons; one-quarter interest in the Bennett, Mesabi range, 5,000,000 tons; one-half interest in the Mahoning, Mesabi range, 35,000,000 tons, and one-quarter interest in the Zenith Vermillion range, 2,000,000 tons. The total for the Midvale in the foregoing mines is 53,500,000 tons. It also has a quarter interest in the Mesabi Iron Co., which controls practically all of the magnetite deposits of the East Mesabi. The latter may prove of exceptional value and importance to the group.

The deposits consist of approximately 1,200,000,000 tons of ore formation, averaging 20 to 25 per cent metalic iron. As about three tons of this material will have to be treated to obtain one ton of shipping product, the total represented is 400,000,000 tons. A quarter interest in this would increase the combination's reserves to 209,000,000 tons, as compared with the Bethlehem-Lackawanna 175,500,000 tons and the United States Steel Corp.'s 1,200,000,000 tons.

The first unit of the plant for concentrating the magnetite was put in operation recently. The company says it is an experiment and the appraisers did not include the tonnage in the schedule of "available reserves." Midvale also has about 300,000,000 tons of ore on the northeast coast of Cuba, of the same general undeveloped classification as Cuban deposits controlled by the Bethlehem company. These low grade ores were not included in "available reserves."

The Republic has a 6 per cent interest in the Mahoning mine, amounting to 5,000,000 tons; half interest in the Union Mining Co.'s deposits equivalent to 400,000 tons; quarter interest in the Zenith mine, 1,500,000; half interest in the York, 250,000 tons; all of the Bray mine, 1,500,000 tons; Schley, 5,000,000 tons; Pettit, 1,600,000 tons; Kinney 500,000 tons, and Gordon, 2,000,000 tons. All of the foregoing mines are in Minnesota. Its interest in mines on the Menominee range give it 12,000,000 tons, and ownership of the Townsite mine, Gogebic range, adds 1,500,000 tons. It has interests in other Lake Superior mines not disclosed its total reserves amounting to 38,000,000 tons.

Based on the amount of ore needed by the blast furnaces of the three companies for operation at present normal capacity, their combined reserves are sufficient for about 16 years.

Steel Corporation and Merger Compared

PIG IRON

	Blast furnaces	Annual capacity, Tons
Steel Corporation	124	18,400,000
Midvale-Inland-Republic	28	4,460,000
Bethlehem-Lackawanna	33	4,184,000

STEEL INGOTS

	Open-hearths	Converters	
Steel Corporation	327	38	22,500,000
Midvale-Inland-Republic	95	6	5,110,000
Bethlehem-Lackawanna	79	17	5,057,000

FINISHING CAPACITY

Steel Corporation	17,500,000
Midvale-Inland-Republic	4,507,000
Bethlehem-Lackawanna	4,250,000

Attacks Bethlehem-Lackawanna Union

WASHINGTON, June 6.—The federal trade commission yesterday issued a complaint against the Bethlehem Steel Corp. and the Lackawanna Steel Co. on the ground their proposed merger "will constitute an unfair method of competition in that it contains a dangerous tendency unduly to hinder competition and to restrain trade and commerce" under the provisions of the federal trade commission act.

The complaint, which carries with it no conviction but rather a suspicion, tentatively fixes the date of the hearing in the case on July 24 at Washington. The complaint is the upshot of the La Follette resolution, asking both the trade commission and the department of justice to investigate the proposed steel mergers. With reference to the Midvale-Republic-Inland merger the commission states it has not yet reached a decision. A complaint may be issued.

The issuance of the complaint insures a hearing, at least, on the Bethlehem-Lackawanna merger, and the hearing will necessarily cover the entire

(*Continued on Page* 1672)

JOHN A. TOPPING

PHILIP D. BLOCK

WILLIAM E. COREY

Leaders in Industry Direct Merger

HISTORY of the three companies uniting in the North American Steel Corp. largely spans the development of modern iron and steelmaking in this country. Likewise the outstanding personalities in the new amalgamation have been taking prominent individual parts in the upbuilding of the general industry during the past 20 to 25 years. Not since the days of the formation of the United States Steel Corp. has a steel combination of such proportions been consummated. The recent merging of the Lackawanna Steel Co. and the Bethlehem Steel Corp. permitted this union to hold only briefly the distinction of being the second largest steelmaker in the country.

* * *

THREE of the leading personalities in the Midvale Steel & Ordnance Co. are men who received their training in the steelworks of the Carnegie Steel Co., both before and after the United States Steel Corp. was organized. These are William E. Corey, chairman of the company, Alva C. Dinkey, its president, and William B. Dickson, vice president and treasurer. Mr. Corey began in the Edgar Thomson Steel Works, then under the management of Capt. W. R. Jones, an old Cambria man. When about 16, he entered the laboratory of the works, and there began to secure the knowledge of the technical side of steelmaking. In 1887 he was transferred to the Homestead Steel Works, where two years later he became superintendent of the 119-inch plate mill. In 1893 he was made superintendent of the armor plate department and succeeded Charles M. Schwab as general superintendent of Homestead Steel Works in 1897. He was president of the Carnegie Steel Co. in 1901 and president of the United States Steel Corp. from 1903 to 1911 when he resigned. In October 1915, together with other interests, he organized the Midvale Steel & Ordnance Co. of which he became president.

Mr. Dinkey also started as a boy at Edgar Thomson Steel Works. Later he became the secretary to the superintendent, Homestead Steel Works of the Carnegie company from 1889 to 1893. He was electrician at the works from 1893 to 1898 and then was superintendent of electric light and power plant for a year, when he became assistant to the general superintendent. From 1901 to 1903 he was general superintendent and Aug. 1, 1903, he was elected president of Carnegie Steel Co. He resigned in October, 1914, to become vice president of the Midvale Steel & Ordnance Co.

Mr. Dickson secured employment on the night turn on the pulpit in the blooming mill of the Homestead Steel Works, and for the next eight years worked at various positions in the converting and rail mills and in the works office. He received promotion through various grades, and in 1899 became a director and junior partner in Carnegie Steel Co., Ltd.

On the organization of the United States Steel Corp. in 1901 he went to New York with Charles M. Schwab, as assistant to the president, and later became a vice president, which office he held until 1911, when he resigned to retire from business. On the organization of the Midvale Steel & Ordnance Co. he became secretary and treasurer and was later elected vice president and treasurer.

When the Midvale Steel & Ordnance Co. was organized in October, 1915, it took over practically the entire capital stock of the Midvale Steel Co., Nicetown, Pa., the Worth Bros. Co., Coatesville, Pa., with which was allied the Coatesville Rolling Mill Co., and the Remington Arms Co. of Delaware with a plant at Eddystone, Pa. The Remington Co. was dissolved in July, 1918. The stock of the Midvale Steel Co. was acquired from the Harrah and other Philadelphia families at a reported price of $22,000,000. The Remington Arms Co. had been formed in 1915, primarily to manufacture rifles for the allies, was purchased for $20,000,000 and the Worth interests for $18,500,000. The company also took an option which subsequently was exercised for the purchase of the entire capital stock of the Buena Vista Iron Co., owning 20,538 acres of high grade ore lands in Cuba. In May, 1916, the property at Wilmington, Del., formerly operated by the Diamond State Steel Co.

The acquisition of a controlling interest in the Cambria Steel Co. was early in 1916.

In November 1915 the Pennsylvania railroad, disposed of its controlling interest in the Cambria Steel Co. This stock subsequently passed through J. L. Replogle and associates into the hands of a group of bankers headed by E. T. Stotesbury, of Drexel & Co., Philadelphia, and A. W. & R. P. Mellon of Pittsburgh.

The Cambria Steel Co. owns a lease from the Cambria Iron Co. for a term of 999 years, and through this controls two blast furnace groups, and five rolling mill plants at Johnstown, Pa.

WILLIAM B. DICKSON

ALVA C. DINKEY

L. E. BLOCK

Works United Have Historic Growth

well as affiliated interests in various Lake Superior iron ore, steamship, limestone and other properties. The Cambria output consists of 11 blast furnaces, open-hearth and bessemer steelworks, and finishing capacity for the production of plates, shapes, bars, rails, wire, wheels and miscellaneous products. It also operates a steel carbuilding department and structural shop. The Worth plants at Coatesville consist of three blast furnaces, open-hearth works, plate mills and boiler tube capacity. The original Midvale Steel Co. which will not be merged directly into the new combination but will be operated as a separate corporation, is a specialized works which has devoted itself mainly to the production of armor plate, ordnance, etc.

* * *

FOR 16 years the Republic Iron & Steel Co. has been under the management of John A. Topping, chairman of its board. The Republic company was organized in March, 1899.

Mr. Topping did not join the organization until January, 1906. He started in the industry as payroll clerk with the Aetna Iron & Steel Co. at Bridgeport, O. At the time of its consolidation with the Standard Iron Co., he became secretary of the new interest, the Aetna Standard Iron & Steel Co. In 1898 he was elected president. Mr. Topping took a prominent part in the consolidation of steel works in 1899 and 1900 and in 1900 was made first vice president of the American Sheet Steel Co. In July, 1903, he resigned and undertook the reorganization of the La Belle Iron Works, which he accomplished in a year. In July, 1904, Mr. Topping became president of the American Sheet & Tin Plate Co., but terminated this connection in January, 1906, to become associated with the Republic Iron & Steel Co. and the Tennessee Coal, Iron & Railroad Co.

His connection with the Tennessee company terminated in 1907 when that interest was taken over by the United States Steel Corp.

When Republic company was organized it embraced a score of wrought iron mills. Gradually the company revamped its entire manufacturing outfit, discarding the iron mills, one by one, in favor of steel and concentrating its operations at Youngstown. Today its plants include only a single iron mill at Moline, Ill. The first steel capacity to be installed was a bessemer works at Youngstown in 1900. In 1910 it added open-hearth furnaces at Youngstown. The tube works at Hazelton, O., was built in 1909 and the Deforest Sheet & Tin Plate Co. property at Niles, O., consisting of 9 sheet mills was acquired in 1919.

* * *

THE history of the Inland Steel Co. cannot be written without a recital of the business biographies of Joseph Block and his three sons, Philip Dee Block, Leopold E. Block and Emanual J. Block. Joseph Block, a member of Block, Pollock & Co., which had plants at Cincinnati and Chicago, was one of the original stockholders in Inland Steel Co., and P. D. Block was treasurer of the organization at its inception and now is its president.

The company began in 1893 with $130,000 capital and the organization took over the plant of the Chicago Steel Co. at Chicago Heights, from the Chicago Heights Land association.

The machinery, little better than scrap, was bought for cash from the defunct company, and the first rolling of bars from steel rails was done in January 1894.

In 1897 the Inland Iron & Forge Co., at East Chicago, Ind., was taken over by interests allied with the Inland Steel Co., and L. E. Block was placed in charge, remaining there until the plant was sold to the Republic Iron & Steel Co. in 1899. It is still operated as the Republic's bar iron plant in the West. L. E. Block then went into the Inland Steel organization and now is chairman of the board. E. J. Block, youngest of the three brothers joined Inland at the time the Indiana Harbor plant was built and has been active in the operating end, being a vice president at this time.

In 1901 the plant at Indiana Harbor, Ind., was started and the first rolled steel products were turned out in 1902. The plant had four open hearths and for several years bought its pig iron. In 1907 the first furnace was built.

In 1919 the No. 2 plant was built to meet demand for increasing tonnages of steel. The plant now has 22 open hearths and three blast furnaces, with finishing mills and other departments to make a balanced operation.

* * *

THOMAS L. CHADBOURNE, who has been the outstanding legal figure in the formation of the North American Steel Corp., is chief counsel for the Midvale Steel & Ordnance Co. In addition, Mr. Chadbourne is a director of the Marlin-Rockwell Corp., New Haven, Conn., and a director of the Burns Bros. Coal Co. In the first industrial conference called by President Wilson in 1919, Mr. Chadbourne was one of the leaders, being a member of the public group and chairman of the general committee.

Gets Details of Proposed Merger

Lockwood Committee in New York Draws Statements from Banker and Executives of Steel Companies which Reflect Consolidation Plans—More Steel Companies May Join Proposed Corporation, It Is Hinted—Judge Gary Testifies

MORTIMER L. SCHIFF of Kuhn, Loeb & Co., questioned by Samuel Untermyer counsel of the Lockwood committee, about the details of the 3-company merger, admitted that his firm is acting as banker for the proposed North American Steel plan and that it first became identified with the merger last October or November. The merger started with seven or eight companies which were giving the matter consideration in the first tentative stages, but it was a fluctuating situation and some companies dropped out and things drifted along. The companies originally participating as he remembered, were Midvale, Republic, Youngstown, Steel & Tube, Inland, Brier Hill and Lackawanna. All these parties were brought together by Thomas L. Chadbourne who handled all the details as to values, past earnings and other factors having a bearing on the banking situation, and these details were furnished by Kuhn, Loeb & Co.

When Mr. Schiff was asked to produce these documents, he declined on the ground that they are private documents which the committee had no power to subpoena. Mr. Untermyer suggested that he consult his attorney on this matter. Mr. Schiff, after consultation, said that if a list were submitted of the papers required, he would consider it and determine whether or not he would be willing to produce them.

Asked whether there had been any communication with the firm of J. P. Morgan & Co. concerning the merger, Mr. Schiff replied negatively and said there had been no inquiry or discussion as to whether the merger would be agreeable to the United States Steel Corp. When the Youngstown Sheet & Tube Co. ceased to be a party to the negotiations for the merger, Mr. Campbell said that he preferred not to proceed further. That is the only reason that Mr. Campbell advanced for withdrawing, Mr. Schiff said.

Mr. Schiff said that Lackawanna withdrew, but that Brier Hill and Steel & Tube still are in the discussion; they have neither said yes or no. He said that the price at which each one of the companies goes into the merger is not essential to the bankers, provided the total is within the proper limit. All three of the companies are receiving securities, except that in the case of Inland stockholders the preferred stock is to be purchased from them. Mr. Schiff said that the proposed capitalization is the existing bonds which he thought amounted to in the neighborhood of $74,000,000, including $5,000,000 outstanding for Inland, $13,000,000 for Republic, $50,000,000 of Midvale bonds and about $8,000,000 of Cambria stock preferred, the latter carrying a guarantee of 4 per cent, making a total fixed charge of about $76,000,000. In addition, he said, the new company will have in round figures about $50,000,000 preferred stock. Between 2,000,000 and 3,000,000 shares of common stock thus far have been provided for and of this Inland will get about 700,000, Midvale 1,500,000 and Republic 510,000, making a total of about 2,710,000 shares. The remainder, approximately 500,000 shares, are to be sold for cash and considering the stock on the basis of common and preferred together, the price works out to about $90 for the preferred and about $43 for the common. The intention is to form a syndicate which will buy $25,000,000 of the preferred and 505,000 shares of common for something over $44,000,000. This would provide a cash payment to the Inland shareholders and about $20,000,000 of new working capital. He promised to give the committee the exact figures later.

Mr. Chadbourne, in consideration of the amount of work he has put in in bringing the merger to fruition, is to have the privilege of buying 25,500 shares of common at $10 a share, and Kuhn, Loeb & Co. as the bankers will buy 59,500 shares at $10 a share.

The stock for which the company is to get $43 per share, figuring the preferred at $90 a share, is to be underwritten, said Mr. Schiff, but no part of the capital to be distributed to the vendors is to be underwritten. Mr. Schiff then produced a copy of the memorandum of agreement between his firm and the vendors. This was initialed in his office late on May 29, one copy going to each of the three component companies. This memorandum was as follows:

"The following tentative financial plan is approved in connection with the proposed accession of Midvale Steel & Ordance Co. under that or some other name, of the assets and properties of the Inland Steel Co. and Republic Iron & Steel Co., as set forth in the attached memorandum: It is proposed that the bankers are to organize a syndicate or syndicates with the cash application of $64,064,925. The syndicate is to agree with the Midvale company that after the merger therein of the Inland company and accession of the Republic Iron & Steel Co.'s properties it will purchase $25,351,475, par value, of preferred stock and 505,331 shares of common stock without par value of said Midvale company for $44,064,925, to provide for the cash payment of $24,064,926 to Inland stockholders and to provide additional cash working capital for such Midvale company. The syndicate is also to provide up to $20,000,000 cash to be used in the discretion of the syndicate managers in the purchase of additional shares of stock of said Midvale company from the company or otherwise. As managers of the foregoing syndicate or syndicates the bankers shall have the right to charge a commission as managers not to exceed 15 per centum of the profits thereof. Fifty-nine thousand five hundred additional shares of Midvale stock without par value shall be sold to the bankers at the price of $10 per share in order to assure them a substantial interest in the said Midvale company, and 25,500 shares of said common stock shall be sold at the same price to Thomas L. Chadbourne, who has directed negotiations of the plan as outlined in the attached memorandum."

Figuring out the details of the transaction, the cost to the new company of providing cash for Inland preferred shareholders will be $23.75 per share or approximately $1,250,000. Asked where Kuhn, Loeb & Co. will get 15 per cent profit on the syndicate, Mr. Schiff said:

The syndicate agreement will provide a certain length of time, surely not longer than six months, during which the stock must be sold. If at the expiration of that time, all of the stock has not been marketed the amount on hand will be distributed among the members of the syndicate, in the proportion in which they have underwritten the stock, in which case, Kuhn, Loeb & Co. would get no profit.

Mr. Schiff was questioned extensively as to the creation of a market of the stock of the new steel company. He denied that his firm is making a market in this stock and in fact said he did not understand what was meant by making a mar-

He said he trusted "the public ll have sufficient confidence in this ng, as we have, to buy the stock." the stock is not sold by public ue, Mr. Schiff admitted, brokers sumably would be employed to rket it. Mr. Untermyer endeavored draw out some testimony to show at the syndicate managers would sue buying and selling orders so ned as to control the market price the stock. Mr. Schiff admitted the ndicate might buy some and that it ight sell some of the same kind stock, but he said there was absolutely no manipulation about these transactions and he protested sharply the manner in which Mr. Untermyer put his questions on this subject, saying he resented any imputation that there would be what he called "wash sales."

In addition to Steel & Tube and Brier Hill, some other companies are under consideration in connection with the merger, but he refused to name them because he said the negotiations are purely tentative. These other companies, he said, did not make structural steel and the committee after some controversy decided not to press this question.

Questioned about the purchase by Kuhn, Loeb & Co. of 59,500 shares of the stock at $10 a share, which would net the banking house a profit of about $2,000,000, figured on the $43 basis, Mr. Schiff explained:

"We are taking the responsibility for the public of fathering financially this concern. We proposed to take a continuing interest in it the way we do with other large corporations with which we are connected."

By a continuing interest he said he meant an interest in the success of the company. The company wants a strong financial interest standing by it at all times to give it financial advice and if necessary financial backing, and Kuhn, Loeb & Co. are willing to do this only if it had a strong financial and continuing interest in the company he said. The $33 difference between $43 and the $10 purchase price does not represent a thing to begin with until it is cashed he explained.

Mr. Chadbourne testified that he has been counsel for the Midvale company since its organization in 1915. Asked if he was the promoter of the proposed merger he said he did not like the name but guessed that it describes one of his relationships to the situation. He began work on the merger about a year ago as an independent venture because he thought the steel situation needed a merger and needed it badly. In addition to other companies mentioned, Pittsburgh Steel Co. and Trumbull Steel Co. were in the first conference, he said. He refused to state Mr. Campbell's reason for withdrawing the Sheet & Tube company from the merger. Mr. Chadbourne said that he acted as a go-between in bringing about the merger, and it was in a double capacity, since all of the companies treated with him not only as negotiator but also as counsel.

Says Corporation Has Advantage

John A. Topping, president of Republic, stated in answer to questions that he believed the Steel corporation has an advantage of $3 to $5 a ton on finished material over the independents. This advantage fluctuates with freight costs and other factors. He put the transportation advantages as first in importance and said the other principal items are "economy and operations through the larger tonnage, reduced overhead, efficiency in operation that comes from a competitive operation, advantages of massing production at strategic points for distribution, geographic advantages both in distribution and assembling raw materials." Figured on the Steel corporation's capacity of 17,000,000 tons of finished material a year, he thought that interest has an advantage of from $59,000,000 to $85,000,000.

Mr. Topping was questioned about the savings that would result from the merging of the three companies Republic, Midvale and Inland, and he said he thought that it would amount to easily $2 to $3 a ton from the reduction of selling expenses, business management, and geographic allocation of orders. He was asked if he did not think it would be a great aid to competition if "these great industrial companies were prohibited from owning transportation as the railroads are now prohibited from owning mines" and he replied that this would put competition on a more even keel.

Mr. Topping said the capitalization of the new company would be on a basis predicated on earning power and useful value of property.

"When the final picture is complete," he said, "you will find the company organized, for the first time in history, where actual capital is less than a fair valuation of the product," and he explained that in this statement he was referring to steel companies.

The basis for turning Republic stock into the North American Steel Co., Mr. Topping said, is $50 a share. Figured at actual valuation, this means that Republic is getting about 50 cents on the dollar for its common stock. It was his judgment that the others are coming in on approximately the same basis.

A. C. Dinkey, president of the Midvale company, was questioned about the beginning of the merger talk. He said nobody started it. He said he was a party to the early negotiations about 18 months ago with the Bethlehem company and thought that Mr. Grace was the prime mover at that time. He said Mr. Grace had nothing to do with the present merger, except to retire from it. He said that the only merger talk between him and Mr. Grace was quite some time ago as to whether it would be a good thing for Midvale and Bethlehem to merge. This was about two years ago, and Lackawanna was not in view at that time. Mr. Dinkey was asked whether the first idea did not comprehend Lackawanna, Midvale and Bethlehem as had been testified to previously by Mr. Grace, and he replied they were not all sitting at one time so that each man has a different picture in his mind.

Mr. Dinkey gave it as his opinion that with the power that exists to regulate rates, it makes no difference whether or not the Steel corporation owns railroads and he did not think that industrial concerns ought to be prohibited from owning them.

Mr. Dinkey discussed the various products made by the three companies going into the merger and said that the effect of the combination is not going to be to limit or restrict competition in the articles that they make, at least in any degree that will be noticeable. There is only one product that all three of them sell, merchant bars, and each company has its own district.

E. G. Grace, president of the Bethlehem Steel Co., asked about the participation of his company in merger negotiations, said the acquisition of the Lackawanna Steel Co. is the result of negotiations which began about last October. There was a prior negotiation about two years ago, which to an extent, included Midvale. The present negotiation, he said, does not contemplate anything other than the acquisition of the Lackawanna Steel Co. and Bethlehem has not discussed any plans looking to the pairing up of the two proposed mergers.

In questioning Chairman E. H. Gary, Mr. Untermyer endeavored to show that the Steel corporation has an advantage over its competitors of $3 to $5 a ton, including "cost of delivery." Judge Gary stated, however, that at the outside this advantage was not over $3 per ton.

The question of the advantages of

(*Continued on Page* 1672)

Detroit Motor Industry Is Speeding Up

Detroit, June 6.—The largest demand experienced by the automobile trade in years is resulting in increased production in nearly all plants. Officials believe new records will be established during June and July. Orders for many thousands of cars are on books. Dealers report an unprecedented demand for cars from all sections of this country and Europe.

There is a shortage of materials, noticeably malleable castings, and the manufacturers are watching the coal strike with keen interest. Steel representatives here are accepting orders only on a restricted basis, and most of the business done is on old contracts.

Ford motor No. 6,000,000 was placed in a chassis May 27. The first Ford motor was installed 22 years ago. An average production of 4200 cars a day is being maintained by the Ford Motor Co. this month, the highest average in the history of the company.

The Fisher Body Corp. has acquired the former plant of the Cadillac Motor Car Co., Detroit, and will devote the 650,000 square feet to building automobile bodies.

New Building Material Index Devised

The United States department of labor, through the bureau of labor statistics, announces that a revision has been made of its series of index numbers showing changes in the general level of wholesale prices of building materials. The index numbers hitherto published by the bureau have been influenced to a large extent by lumber prices in the New York market. These were practically the only prices available to the bureau at the inception of its series of weighted index numbers in 1913. It has recently become possible, however, to substitute lumber prices in other and more representative localities for those previously obtained in the New York market. In all such cases the new prices have been carried back to 1913.

In addition to the changes with respect to lumber, structural steel and a number of other important building materials not previously included in the index have been introduced into the revised index number and carried back to 1913.

Besides the substitution of lumber prices in other localities in place of the New York city prices and the inclusion of a number of new articles in the revised index, the figures have been further revised by the use of the more recent 1919 census for weighting purposes instead of the 1909 data formerly employed. In the case of lumber, particularly, the use of the more recent information has appreciably affected the index numbers, since the cut of most kinds of lumber was much smaller in 1919 than in 1909.

In addition to the building material price index the department has compiled an index of union wage scales paid to building trades, as of May each year.

Index numbers of the lowest, highest, and average wholesale prices of building materials in each year, and of union wage rates per hour in May, 1913 to 1921, are shown as follows:

Building Material, Average 1913 = 100
Union Wage Rates, May, 1913 = 100

Year		All building materials	All building trades (May)
1913	Lowest	96	...
	Highest	103	...
	Average	100	100
1914	Lowest	88	...
	Highest	94	...
	Average	92	102
1915	Lowest	88	...
	Highest	104	...
	Average	94	103
1916	Lowest	110	...
	Highest	132	...
	Average	120	106
1917	Lowest	138	...
	Highest	169	...
	Average	157	113
1918	Lowest	161	...
	Highest	179	...
	Average	172	126
1919	Lowest	169	...
	Highest	248	...
	Average	201	145
1920	Lowest	204	...
	Highest	300	...
	Average	264	198
1921	Lowest	156	...
	Highest	192	...
	Average	165	201
1922	January	157	...
	February	156	...
	March	155	...

Equipment Trusts Sold

Recent sales of equipment trust certificates by the railroad administration have brought total sales to date of these certificates, given in return for loans for the purchase of cars and locomotives, up to $263,258,750. In the past few days the administration has marketed $3,283,800 certificates of the Chesapeake & Ohio railroad, $2,561,000 of the New Haven, and $2,344,550 of the Rock Island.

Foundries Has Surplus

The American Steel Foundries in its report for the quarter ended March 31 shows a surplus, after charges and federal taxes, of $477,439. This compares with $518,280 in the corresponding quarter of 1921. The directors have declared the regular quarterly dividend of 75 cents a share on common stock and 1¾ per cent on preferred.

Anti-Bribery Bill Is Passed by House

Washington, June 6.—Fine up to $3000 and imprisonment up to two years, or both, is the penalty provided for commercial bribery in a bill just passed by the house and referred yesterday to the senate judiciary committee. A strong feature of the bill is that immunity is granted for turning state's evidence, thereby removing a barrier that sponsors of the bill have asserted has retarded uncovering of bribery and its elimination. The bill had the support of 39 national associations, including the National Founders' association and the National Association of Purchasing Agents. It makes it unlawful for any person, corporation or organization of any kind to give any commission, reward or valuable thing to any employe or member of his family "for doing or omitting to do any act or for showing or forbearing to show any favor or disfavor by such employe or agent in relation to the affairs or business of his employer." The bill also makes it illegal for anyone to give any receipt, invoice or similar document which is false or defective in any particular.

French Engineers Hosts to Americans

Washington, June 6.—Expressions of international co-operation and amity were exchanged last Monday night when members of the Societe des Ingenieurs Civil de France were hosts to the deputation of American engineers who went abroad to confer degrees upon French and English engineers and to leading engineers, including officers of the Federated American Engineering society. Secretary of Commerce Hoover was toastmaster. Ambassador Jusserand was the principal guest and speaker. The guests included:

Ambrose Swasey, Cleveland; John R. Freeman, of Providence, R. I., president of the American Society of Civil Engineers; Arthur S. Dwight, president of the American Institute of Mining Engineers, New York; L. P. Alford, vice president American Society of Mechanical Engineers, New York; Maj. Gen. George O. Squier, American Institute of Electrical Engineers; J. Vipond Davies, president United Engineers society, New York; Charles F. Rand, Engineering Foundation, New York; Aime Dumaine, president American section of the Societe des Ingenieurs Civil de France; R. A. Cummings, American Society Civil Engineers; William Kelly, American Institute of Mechanical Engineers; E. M. Chandler, secretary American Society of Civil Engineers; Calvin W. Rice, secretary American Society Mechanical Engineers.

Fair Demand

Reported for Coke Oven Distillates; New Classifications are Added

New York, June 6.—Demand for greater standardization of coke oven light oil distillates has resulted in a leading producer adding several new classifications to its list. These are nitration benzol, noncorrosive commercially pure benzol, nitration toluol, commercial xylol, special solvent naphtha and special commercial xylol.

Uses of the various products as now classified are as follows: Nitration benzol is for the production of dyes, etc., where the purest possible benzol, with minimum aliphat content is required; non-corrosive commercially pure benzol, for the manufacture of lacquers, sanitary can cements, etc., where quickest evaporation is desired and where aliphat content is not especially objectionable, but where benzol must have a minimum corrosive tendency; commercially pure benzol where a quick evaporatent is required primarily for solvent work only and where the presence of aliphat and sulphur bodies is not particularly objectionable; noncorrosive 90 per cent benzol, for the manufacture of lacquers, etc., where slower than pure benzol evaporation is desired but where benzol must have the minimum corrosive tendency, and commercial 90 per cent benzol for general solvent work where the rate of evaporation is the principal factor and the presence of aliphats and sulphur bodies is the secondary issue.

Further uses are: Nitration toluol in production of dyes, etc., where the purest toluol practical to produce is required; noncorrosive commercial toluol, primarily as a solvent, where rate of evaporation is the principal factor and where aliphat content is not particularly objectionable but where solvent must have the minimum corrosive tendency; commercially pure toluol, a solvent, etc., where rate of evaporation is the prime factor and purity not the paramount issue; and commercial xylol, a solvent in the production of inks for intaglio process and operations of comparable character where the rate of evaporation and freedom from corrosive tendencies are paramount.

Solvent naphtha is for use as a solvent, etc., where the rate of evaporation is the prime issue and the sulphur content and corrosive tendency are of no special moment. Special solvent naphtha is required where "cleaner" solvent is demanded and hence a better wash color is required. Special commercial xylol is for use as a solvent, etc., but where in addition the product must be noncorrosive.

Although domestic demand still is under normal, a fairly active trading is being done. This, for the most part, is for nearby shipment. Prices are strong. Sulphate of ammonia for domestic account is slightly higher, due to the sold-up condition of sellers and the likelihood of early contract buying for next season's requirements. The situation in naphthalene is unchanged. The same is true of phenol.

Coke Oven By-Products

	Spot
Per Gallon at Producers' Plants in Tank Lots	
Pure benzol	$0.30 to $0.33
Toluol	.30 to .33
Solvent naphtha	.27 to .29
Commercial xyol	.29 to .32
Per Pound at Producers' Plants	
Phenol	$0.15
Naphthalene, flake	.07 to .08
Naphthalene, balls	.08 to .09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia	$2.70 to $2.75
(Prices on spot sulphate also quotable on business for delivery over next several months.)	
Contract	
Pure benzol	$0.27 to $0.29
Toluol	.28 to .30
Solvent naphtha	.25
Commercial xyol	.29 to .32
Per Pound at Producers' Plants	
Phenol	nominal
Naphthalene, flake	$0.07 to $0.08
Naphthalene, balls	.08 to .09
Per 100 Pounds at Producers' Plants	
Sulphate of ammonia (12 months)	nominal

International Labor Body Presents Problem

The international labor organization set up as part of the league of nations consumed in 1921 more than a third of the income of the league, covers about three-quarters of the world's territory, and is growing rapidly in the scope and influence of its activities, according to a report just published by the National Industrial Conference board, New York. The international labor organization exists under sanction of the Treaty of Versailles. The United States and Russia are the only nations of major industrial importance which stand outside the organization's activities, and the work of the organization raises serious problems for American industrialists, the report says. Continuing:

"In the United States the individual establishment is accepted as the unit of production, and the principle of the open shop has always prevailed in the majority of industries. In other industrial countries, particularly in Europe, the closed union shop is the rule, and collective bargaining through trade union representatives is the common procedure. Since the regulation of labor conditions in this country, except in interstate commerce, is specifically reserved to the separate states, a serious constitutional difficulty would appear with regard to the adoption of the draft conventions of the international labor organization by the United States congress.

"In view of the difficulties which arise in any attempt at international labor legislation and of the fundamental difference between the industrial situation and philosophy of the United States and that of other countries, the question arises, whether it would not be a wiser policy to let these two industrial philosophies, that of the United States and that which may be characterized as the European, work out side by side unhindered for a sufficient time to prove conclusively under which philosophy all those engaged in industry, and society as a whole, will best be served."

Wages Are Increased in Ohio Plants

A general wage increase to employes of the Central Steel Co., Massillon, O., amounting to 10 per cent, became effective June 5, according to announcement of F. J. Griffiths, general manager. About 2000 employes share in the increase. It applies to the plants of the Central Steel Co., the Massillon Rolling Mill Co., and the National Pressed Steel Co., the three corporations having been merged into the Central Steel Co., some time ago.

The Timken Roller Bearing Co., Canton, O., has advanced wages of shop employes 10 per cent effective June 1, and also has adjusted all other salaries to make the pay the same as it was prior to September 1921.

Steel Leads Labor Gains

Evidence of increasing demand for labor continues to come from various industrial centers. In Cleveland 100 factories normally employing 500 or more persons reported to the chamber of commerce that on the last day of May they had 80,577 in their employ, compared with 78,144 the last day of April and 74,711 the last day of March. The gain during May was 3.1 per cent. The largest individual gain was reported by the iron and steel industry, amounting to 7.2 per cent. Forty two plants in the industry were employing 38,270 on the last day of May.

Strikes Are Reduced

A reduction in the annual number of strikes in the past two years is indicated by a table compiled by the bureau of labor statistics, Washington showing the reported number of strikes in the United States for each year, 1916 to 1921. The largest strike during 1921, that of marine workers, involved about 140,000 and included all the principal ports in the country. About 39 per cent of the strikes in 1921 were due to proposed wage reductions. The division of conciliation assisted in adjusting nine of the 21 disputes which were brought before it in March, 1922, while on April 1 there were 40 cases pending of which nine had not yet reached the strike stage.

Price Limit Is Put on Spot Coal

Maximum Figure for Mine-Run Grade Voluntarily Fixed at $3.50 in Virginia, West Virginia, Eastern Kentucky and Tennessee Fields—Alabama, $2.20 to $2.60—Proposal for Consumers' Pool Is Postponed

WASHINGTON, June 6.—Bituminous coal purchases by the iron and steel industry will not be pooled, at least for the time being, by Secretary of Commerce Hoover. No specific reasons accompany Secretary Hoover's statement that the formation of a pool committee is not now being considered, but it would appear that increased production has dulled somewhat the edge of the emergency, and the outcome of agreed maximum prices at the mines is being waited. Committees representing the railroads and the public utilities are co-operating with the secretary. These two interests, along with the iron and steel industry, consume by far the bulk of steam coal, and they were grouped in the original Hoover pool proposal.

Conferences last week have resulted in the fixation of maximum agreed prices in the Alabama, Virginia, West Virginia, eastern Kentucky and Tennessee fields. Because of decreased operating costs in the Alabama fields, mine-run coal from that state is to go no higher than $2.20 to $2.60 at the mines. In the other fields mentioned the agreed maximum for mine-run at the mines is $3.50 per ton. Grades other than mine-run will take the differentials of the Garfield scale. The $3.50 price includes wholesale selling cost, which was not included in the Garfield scale. Western Kentucky operators are holding out for $4.50. Secretary Hoover does not feel justified in advising the public to buy at the latter level but does concede that costs in western Kentucky have increased more than in other fields. Conferences are being held this week on the Pennsylvania fields in operation.

Cover Spot and Free Coal

Emphasis is laid by the secretary upon the fact that these prices cover spot or free coal only and are for the period of the strike. Contract coal is supposed to move at the contract price. No consideration was given to prices for fields shut down by the strike. Consumers believing they are being charged more for fuel than the agreed maximum prices are asked to lay their case before the department of commerce at Washington. Stabilization of prices at this time will assist in preventing great fluctuation when the union mines resume, Secretary Hoover believes.

At the conferences last week preliminary to the agreement of these temporary price levels the strike situation was not directly discussed. One prominent operator is reported to have informed the President that the strike would end about Sept 1 in favor of the operators. The concensus of opinion seemed to be that the mine workers are holding out better than expected, and so are consumers' stocks. There are no indications of any significant weakness on either side, is the government's belief, and apparently there is no more disposition today to intervene than there was when the strike came on April 1.

A report to congress by the federal trade commission credits bituminous coal operators with an annual average profit of 15 per cent for the six years ending with 1921. The 1916 profit is placed at 8 per cent, the 1917 at 29, the 1918 at 18, the 1919 at 6, the 1920 at 23 and the 1921 at only 3. The investment per ton of annual output is given as $3.12 but this could be reduced to $2.80 or even less by subtracting excess reserves. The commission again cites the need of collecting coal data, which has been barred by injunctions in the Claire Furnace and Maynard Coal cost-reporting suits.

George Otis Smith, director of the geological survey, today lauded the Hoover plan and warned that the fuel situation is "loaded." Since April 1, he pointed out, production has been half of consumption, and while production is increasing "no possible stocks of coal in storage can long stand this drain of 3,500,000 to 4,000,000 tons a week." A buyers' panic and a runaway market usually happen at the same time and aggravate each other, according to Mr. Smith. He said:

"It is obvious that with this condition of under supply of many consumers coal production needs to be stimulated, and a fair price to accomplish most must be a generous price. Furthermore, the secretary's decision as to a limiting price had to be reached without delay. It was imperative that even the high-cost producer be encouraged to contribute his tonnage, and therefore a fair maximum price was established for as wide a territory as possible, and the coal operators were urged to speed up production. Tons mined are far more important to the country than cents saved. The buying public should keep in mind that the $3.50 which is set up as a fair price for most of the coal fields south of the Ohio and Potomac is a maximum price and that it applies only to spot coal. More than half of the present output of these fields is still under control and in view of the steadier business these contracts permit the contract coal is normally delivered at much lower figures. Those who will insure themselves with new contracts can also get much better terms than this spot price."

Connellsville Coal Output Gains Slowly

Preliminary figures received at the office of the geological survey indicate that in the ninth week of the coal strike, May 29-June 3, production of coal decreased because of the observance of Memorial day. Reports for the first four days of the week point to an output for the week of 4,550,000 to 4,750,00 tons. The survey observes that "production of anthracite remains practically at zero," and proceeds to say:

"Loadings on Monday of the ninth week, were 15,082 cars, the largest for any Monday since the strike began.

"No great change in the number of men on strike has yet occurred. Production is increasing very slowly in the Connellsville region, and more rapidly in southeastern Kentucky and Tennessee. In the union and open-shop districts of West Virginia there is a slight but perceptible increase. In none of the strongly organized districts, however, has work been resumed, and there are still thousands of miners on strike in the nonunion districts of Pennsylvania.

"The accumulation of unbilled coal is declining. Consumers' stocks of both anthracite and bituminous coal are falling steadily but by how much cannot be stated for the present rate of consumption is not known accurately."

Beehive coke production for the week ended May 27 compared with preceding weeks follows:

	Week ended—			
	May 27, 1922	May 20, 1922	Mar. 25, 1922	Mar. 18, 1922
Penn. and Ohio.	72,000	72,000	134,000	118,000
West Virginia..	8,000	8,000	10,000	9,000
Ala., Tenn. and Georgia	6,000	7,000	8,000	7,000
Virginia and Ky.	8,000	7,000	9,000	8,000
Colo. and New Mexico	4,000	4,000	2,000	3,000
Washington and Utah	3,000	3,000	4,000	4,000
United States total	101,000	101,000	167,000	149,000
Daily average..	17,000	17,000	28,000	25,000

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

TILLMAN DANIS LYNCH, who has been nominated for the presidency of the American Society for Steel Treating, which is virtual election to the office, has been associated with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., since 1899 on the general subject of

TILLMAN DANIS LYNCH

materials, treatment and their applications, including such sub-divisions as inspector of materials; engineer of tests; section engineer in charge of manufacturing processes, material specifications, metallurgical engineering on both ferrous and nonferrous metals, materials in design and the application of research work to commercial use. During the Spanish American war, Mr. Lynch was with the American navy's bureau of steam engineering engaged in inspection work at foundries and mills on armor plate, structural materials, boiler tubes, ferrous and nonferrous castings including the manufacture and treatment of hull and engine steel castings. For six years from 1891 Mr. Lynch was with G. W. G. Ferris & Co., Pittsburgh, Chicago and New York, contracting and inspecting engineers, on inspection at mill, foundry, shop and field erection and the last two years of the period in charge of the Chicago office. He was graduated from the University of West Virginia as a civil engineer in 1891. He was born in Harrison county, W. Va., in 1867. His summer vatcations were given over to surveying. Mr. Lynch is a member of the American Society for Testing Materials and active on 10 of its main committees and eight of its subcommittees and is a member of the Engineering Society of Western Pennsylvania. He was vice president of the American Society for Steel Treating in its first year and is chairman of its committee on standards. He is the author of numerous technical papers for societies or their publications.

George Roberts, proprietor of the Thistle Wire Works, Lee, Mass., will sail June 14 on his annual visit to Scotland.

Lewis A. Hastings, publicity manager for the Heald Machine Co., Worcester, Mass., has been elected president of the Advertising Club of Worcester.

Clarence R. Howe has resigned from the Universal Winding Co., Auburn, R. I., to become vice president of the T. C. Entwistle Co., Lowell, Mass., builder of machinery.

Frederick R. Pratt, superintendent of Machinery construction in Japan for the Whitin Machine Works, Whitinsville, Mass., returned to the former country this week after a visit at the home office.

Hazen B. Hinman, for the past year steel salesman for the Stanley works, New Britain, Conn., prior to which he was superintendent of its cold-rolled plant, has resigned to become superintendent of the Trumbull Steel Co., Warren, O.

Frederick P. Weaton has resigned as president of the Torrington Co., Torrington, Conn., on account of ill health. He is also president of the Excelsior Needle Co., and the National Sweeper Co., both of Torrington, subsidiaries. He will continue as a director and in an advisory capacity.

L. J. Hengesbach, superintendent of the Van Dorn Electric Tool Co., has been elected president of the Industrial Association of Cleveland. Other officers elected are: Vice president, W. B. McSann of the Brown Hoisting Machinery Co.; secretary, F. A. Olmstead of the Chain Products Co.; and treasurer, H. N. Clark of the Cortescope Co.

Ralph W. Clark whose appointment as New York district pig iron sales

RALPH W. CLARK

manager for Pilling & Co. with headquarters at 2 Rector street, New York, was announced in THE IRON TRADE REVIEW last week, long has been one of the best known pig iron salesmen in this country especially in the east. Mr. Clark resigned a 22-year connection with the New York office of Rogers, Brown & Co. in order to assume his new affiliation. He originally started to sell pig iron with Rogers, Brown & Co. in the Chicago territory, later going to Buffalo, then to Boston and for the past 15 years in New York. During the war he was chief of the raw materials priority division of the ordnance department at Bridgeport, Conn. and also was regional priority adviser for the government in sub-district No. 2, with headquarters at Bridgeport. Mr. Clark and his selling organization are expected to become one of the largest merchant iron factors in the New York territory from the standpoint of tonnage.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

W. WOODWARD WILLIAMS has been elected vice president of the Titan Iron & Steel Co., Newark, N. J., manufacturing mechanically puddled wrought iron. He formerly was general manager of the A. M. Byers Co. and subsequently of the Reading Iron Co. Mr. Williams' experience in the iron and steel industry began immediately upon his graduation from Harvard university in 1905. After six years in the mills of the Carnegie Steel Co. at Pittsburgh, Duquesne and Youngstown, Mr. Williams entered the sales department of the Bourne-Fuller Co., Cleveland, and was later appointed manager of its Pittsburgh office. In January, 1914, he became general manager of sales of the A. M. Byers Co., Pittsburgh, and subsequently was made its general manager. In August, 1919, he became general manager of the Reading Iron Co. and afterward was elected vice president in charge of sales and operations. In September, 1920, he became associated with the Pittsburgh Gage & Supply Co., the largest jobbers of wrought iron pipe in the United States, resigning the vice presidency on May 31, 1922, and entering immediately upon his duties as vice president of the Titan company.

John A. Donaldson, vice president of the Pittsburgh Coal Co., Pittsburgh, was elected one of four directors at large of the National Coal association at its recent convention in Chicago.

C. F. Herington has been placed in charge of the pulverized coal department which recently was re-established by Heyl & Patterson, Inc., Pittsburgh, contracting engineers.

Frank L. Rowland, assistant treasurer of the Gilbert & Barker Mfg. Co., West Springfield, Mass., has been elected president of the National Association of Office Managers.

Thomas Lewis of Sayre, Pa., recently was elected president of the Master Boilermakers' association. Harry Vought of New York and H. H. Loughridge of Columbus, O., were re-elected secretary and treasurer, respectively.

A. D. Halporn, who has been associated with the Philadelphia sales staff of the Combustion Engineering Corp. for some time, now has been made a member of the New York sales force of the company.

Henry H. Morse of Boston has been appointed chief of the specialties division of the bureau of foreign and domestic commerce, effective July 1. He has been export manager for the

W. WOODWARD WILLIAMS

Regal Shoe Co. since 1912 and has served as special lecturer at various times on export topics at Boston university, Dartmouth and Harvard. He has been chairman of the Boston Export Round Table since 1919, chairman of committee on trade expansion of National Boot and Shoe Manufacturing association since 1919, honorary vice chairman and member of National Foreign Trade convention in Cleveland in 1921, and director of the New England chamber of commerce and chairman of the advisory committee on foreign mails from 1919 to 1921.

William J. Merten, who recently was elected vice chairman of the Pittsburgh chapter, American Society for Steel Treating, is metallurgical engineer of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Eugene N. Foss, president of the B. F. Sturtevant Co., Hyde Park, Mass., is to be a candidate this fall for the democratic nomination for governor of Massachusetts. He was governor of the state in 1911, 1912 and 1913.

Norman R. Seidle has resigned as assistant general manager of the Charles G. Heggie Co., Joliet, Ill., to become works manager of the General Boilers Co., Waukegan, Ill., manufacturer of steel welded boilers for general heating purposes.

H. A. Baugh, formerly affiliated with the Chicago office of the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., has been transferred to this company's Pittsburgh office to assist N. P. Farrar in the sale of both cranes and hoists in the Pittsburgh district.

Ray F. Deering, M. R. Leathers, John P. Perin and G. N. Berry, all of Springfield, Mass., and A. O. Eberhardt, Chicago, have been elected directors of the Stevens-Duryea Co., Williamansett, Mass., builder of automobiles.

W. H. Bischoff has been appointed general superintendent of the Dominion Iron & Steel Co., succeeding the late H. E. Rice. Mr. Bischoff was engaged with the company for a period during the war, going there from the Bethlehem Steel Co.

Elbert H. Gary, chairman of the United States Steel Corp., is to receive the honorary degree of doctor of laws from Northwestern university, Evanston, Ill., June 21. Judge Gary has been a trustee of the university for 30 years.

William F. Stearns, for many years New England manager for the American Radiator Co., with headquarters in Boston, has severed his connection with the company. E. H. Dean, the company's representative in Worcester, Mass., is to be transferred to the New Hampshire territory.

William P. Dallett president and general manager of the W. P. Dallett Co., Philadelphia, builder of pumping machinery; Charles A. Booth, sales manager of the Buffalo Forge Co., Buffalo, N. Y.; and Frederick A. Feiker, vice president of the McGraw-Hill Co., Inc., New York, have been elected trustees of the Worcester Polytechnic institute, Worcester, Mass.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

QUIGLEY Fuel Systems, Inc., have been organized with general offices at 26 Cortlandt street, New York. This embraces the business which has been the Quigley fuel systems department of Hardinge Co., Inc., and which up to a few months ago had been the pulverized fuel department of the Quigley Furnace Specialties Co. William H. Baker is president of Quigley Fuel Systems, Inc., W. O. Renkin is managing engineer, and L. W. Marso represents the company in the Pittsburgh district. The new company is entirely independent of the Hardinge Co., although Mr. Baker continues as vice president and consulting engineer for the Hardinge Co. The company is just completing what is said to be the largest installation of powdered coal in the world in the steel works of Societe Anonyme Ougree-Marihaye at Liege, Belgium.

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THE Worcester Electric Supply Co., Worcester, Mass., has taken over the Ramsdell Specialty Co., Inc., maker of screw machine products and sheet metal stamping in the Greendale section of that city, and will operate it as plant No. 2. James W. Grady is president of the company, which operates plant No. 1 at 68 High street, Worcester.

* * *

COMPLETE and ready for manufacture, the new plant of the Murman Mfg. Co., Gloucester, Mass., recently organized, now is occupied. The company, formed in April to manufacture tools, has the following officers: President, John J. Moran; treasurer, David F. Murphy; and superintendent, James H. McElroy. The plant property comprises 2½ acres.

* * *

WHAT is said to be probably the largest single order for dry kiln equipment ever placed recently was booked by the National Dry Kiln Co., Indianapolis, for the Ford Motor Co. for Iron Mountain, Mich. The order consists of 662 carloads of mechanical equipment. Previously the National company had received 19 consecutive orders for dry kiln equipment from the Ford company which has been placed in the plants at River Rouge and Highland Park, Detroit, and at Hamilton, O., and Iron Mountain. The new kiln, when complete, will hold 5,000,000 to 7,000,000 board feet of lumber. To house the equipment, the Ford company will have to build approximately 2,500,000 feet of dry kiln buildings beside adjoining buildings such as dry storage rooms, transfer ways, etc.

* * *

THE Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., has appointed the Charleston Electric Supply Co., Charleston, W. Va., as its agent in West Virginia, southern Ohio, and eastern Kentucky in the sale of cranes and hoists, with the exception of its liftabout hoists, the sale of which will continue in the hands of the Beckwith Machinery Co. at that point, Pittsburgh, and elsewhere.

* * *

OFFICERS of the National Scale Corp. successor to the National Scale Co., Chicopee, Mass., manufacturer and distributor of counting and weighing machines, calling systems, steel shelving, etc., have been elected as follows: President, F. D. Howard; vice president, I. H. Page secretary, L. I. Howard; treasurer, C. H. Leonard; and general sales agent, P. L. Bryning. The company maintains offices at 12 Pearl street, Boston.

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AMONG the new incorporations established in the past month is the Woods-Decker Co., Inc., 90 West street, New York, sales engineers. The company is exclusive agent in New York territory for the Advance Pump & Compressor Co., Battle Creek, Mich., and the Hayton Pump & Blower Co., Appleton, Wis. Floyd F. Woods, president of the company, was associated with the Epping-Carpenter Pump Co., Pittsburgh, and for several years was its general sales manager. David P. Decker, who is secretary and treasurer, has been associated with the pump trade in New York city for the past eight years.

* * *

CONSOLIDATION of the Simms Foundry Co. and the Racine Furnace & Foundry Co., both manufacturers of warm air furnaces and other heating appliances at Racine, Wis., has been accomplished. They are merged in a new $200,000 corporation under the name of Simms Foundry Co., with Horace R. Simms as president; J. Harvey Manny, Chicago, and Griffith G. Jones, Racine, vice presidents; James V. Rohan, treasurer, and George L. Buck, secretary. The Simms foundry has a capacity of 15,000 warm air furnaces a year. With the Racine foundry, the new company has available a daily capacity of 50 tons of castings. Both shops are now working at 100 per cent.

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WITHERBEE, SHERMAN & CO. have retained Freyn, Brassert & Co., Chicago, as consulting engineers in the construction of a blast furnace at Port Henry, N. Y.

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INCORPORATION of the Ohio Pumping Machine Co., Akron, for $100,000 was announced recently. The incorporators are Huntlie R. Gordon, R. C. Witwer, Dow W. Harter, Charles C. Benner and Eleanor Carney. The new company plans to move to Akron from Fitchburg, Mass. It is at present operating at Fitchburg under the name of the Blake Fitchburg Pump Co.

* * *

MOTOR truck bodies, cabs and trailers are being built by the Lincoln Motor Body Co., which recently was incorporated at Toronto, O., with $15,000 authorized capital. The company occupies 5500 square feet of floor space at 105-107 South Third street, Toronto, and expects to have its own building in the near future. Officers of the company are: President, L. S. Owings; vice president, F. C. Foss; secretary and treasurer, F. M. Myers; and general manager, Arnold Davis Jr.

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PLANS of Alfred Box & Co., Inc., Philadelphia, builders of cranes and hoists, call for a factory building 110 x 300 feet with extended runways to accommodate cranes which will handle steel storage. A pattern shop and pattern storage building, 30 x 80 feet, with necessary office accommodations, also is to be built, the additions, which are to be modern in every respect, will enable the company to triple its output, according to G. A. Mitchell, secretary and sales manager.

Attacks Bethlehem Deal

(*Continued from Page* 1661)

steel industry. The relation of the United States Steel Corp. to the industry as a whole from the competitive standpoint also will be reviewed.

The reply of the trade commission to the La Follette resolution of May 12 follows:

"In the early part of December, 1921, the attention of the federal trade commission was attracted by reports and rumors of proposed and impending mergers of considerable importance in many lines of industry. The commission directed its proper officials to seek all possible information with reference to these proposed mergers and to keep the commission advised as to their progress. Prior to the adoption of the senate resolution the proposed merger among the steel companies was under observation.

"Subsequent to the adoption of the resolution in question it became apparent that the movement toward a merger in the steel industry had taken on the form of a combination of the Bethlehem Steel Corp. and its subsidiaries with the Lackawanna Steel Co. and its subsidiaries on the one hand, and a like combination of the properties of the Midvale Steel & Ordnance Co., the Republic Iron & Steel Co. and the Inland Steel Co., these three latter companies proposing to form a new corporation to be known as the North American Steel Corp.

"The commission had considerable information already at hand with reference to the position of Bethlehem and Lackawanna and the relation of each to each other and to competitive conditions in the steel market generally. This information has been supplementetd by inquiry and research with the result that the federal trade commissoin upon the information before it, has reason to believe, in the language of its constituent act, that the proposed Bethlehem-Lackawanna merger when consummated, will constitute an unfair method of competition in that it contains a dangerous tendency unduly to hinder competition and to restrain trade and commerce, and that a proceeding by the commission in this respect is in the public interest.

"In this aspect it becomes the duty of the commission to issue its complaint and to state its charges in that behalf. The commission therefore issued its complaint directed to the Bethlehem and Lackawanna companies on Saturday, June 3.

"With reference to the proposed Midvale-Republic-Inland merger and the formation of the North American Steel Corp., we are advised that tentative arrangements entered into between the executive officers of these three companies have been settled upon and agreed to on behalf of the board of directors of the companies and tentative arrangement has been made with Kuhn, Loeb & Co. for the financing of the proposed merger. The actions of these three companies have not so far advanced toward completion as to reveal the essential facts with the same precision and comprehensiveness as in the Bethlehem-Lackawanna case, and the commission therefore has not yet been able to reach a reason to believe either that the proposed 3-company merger will or will not carry the same tendency and capacity as in the case of the Bethlehem-Lackawanna merger. The details of this plan are, however, being carefully followed and so soon as the commission is in possession of sufficient information it will make further report to the senate as to the second of these proposed mergers."

The formal complaint says in part:

That said combination of the respondents, Bethlehem Steel Corp and Lackawanna Steel Co., will, when the transfers herein described are consummated, control in excess of 22 per cent of all the steel rails produced in the United States and in excess of 33½ per cent of all steel rails produced in Ohio and all territory north of the Potomac river and east of the said state; said combination will also control in excess of 26 per cent of the long angled splice bars and other rail accessories manufactured in the United States and in excess of 39 per cent of these commodities produced in Ohio and all territory north of the Potomac river and east of the said state; that said combination will control substantial percentages of other crude, semifinished and finished iron and steel commodities made in the United States, and a substantially larger percentage of these commodities made in Ohio and all territory north of the Potomac river and east of the said state.

That said acquisition by respondent, Bethlehem Steel Corp., will suppress and eliminate all competition which has hitherto existetd between Bethlehem Steel Corp. and its subsidiaries or each or any of such subsidiaries and the Lackawanna Steel Co. and its subsidiaries or each or any of such subsidiaries. The said merger or consolidation of properties, business and interests of the respondent, Bethlehem Steel Corp., and its subsidiaries, and of the Lackawanna Steel Co. and its subsidiaries, has a dangerous tendency unduly to hinder competition in interstate commerce or to hinder and lessen competition unduly in interstate commerce in the steel and iron commodities named in this complaint, particularly in New England, New York, New Jersey and eastern Pennsylvania.

That said acquisition by respondent, Bethlehem Steel Corp., has a dangerous tendency unduly to restrain trade and commerce among the several states in the iron and steel commodities, and if and when accomplished, will unduly restrain such trade and commerce in such commodities; and constitutes an attempt to monopolize and will monopolize such interstate trade and commerce particularly in New England, New York, New Jersey and eastern Pennsylvania.

Plans of the 3-company merger were laid before the commission and the department of justice by Thomas L. Chadbourne, through whom the merger negotiations have been made, in accordance with the agreements following the commission's telegraphic demand of May 13 and the conference with Attorney General Daugherty on May 23. The statement of Mr. Chadbourne to the commission included no reference to the financial aspects of the merger.

Gets Details of Merger

(*Continued from page* 1665)

the Steel corporation by the operation of its own railroads and the propriety of such control also was gone into.

Q "Is not there a manifest advantage over your competitors in your ownership of interstate transportation?" A "If you refer to the mining properties, I would say no, Mr. Untermyer."

Q "Now, referring to the manufactured product there is a distinct advantage?" A "I don't think so, Mr. Untermyer."

Q "Then if there is no advantage whatever in the ownership of the transportation companies, there will be no objection would there, to divorcing them."

"If you will allow me, I will try to tell you briefly why," answered Judge Gary. "In the conduct of such a large mining and transportation business as we do in the Northwest, it is essential that the very best service be rendered by the railroads, and if it had to depend upon the will and disposition of an independent railroad whose services were largely devoted to the general public, it is probable that the service would not be so good. Now if that applied with equal force to the independent mining and manufacturing companies, in practice, of course I might have a different opinion. It does not, and I do not think it would be allowed if it was attempted. By that, I mean to say, I think the independent mining companies and manufacturing companies in the Northwest have just as good service from our railroads as we get for our manufacture. I do not think there has ever been any discrimination or any claim of discrimination by any one."

Mr. Untermeyer tried to show that the independent steel companies exist "by grace" of the Steel corporation because of the latter's operating advantages.

"Take for instance the time you had only 45 per cent of your capacity employed in which you made, as the figures show, more money than when you had double the capacity, with your differential in your favor, by underbidding and bidding for the business, your competitors could not have existed, could they?" he asked. A "Why do you think we did not do it?", Judge Gary responded.

Q "I am no assumintg that you should have done it." A "But if we ruthlessly drove the others out of business, we would have been in precisely the same position that some of these other companies were in that were in that were dissolved by government law suits."

Q "I see; you had your eye to that law suit all the time, did you; you were in the courts and you knew you had to behave yourself in order to get the favor of the courts, and you would have done so anyway?"

A "For two good reasons; First, because it was right to do it, and secondly, because we had to do it," said Judge Gary.

Machinery Inquiries Numerous

Several New Lists Placed Current Including Ones from Wabash and Erie Railroads —Orders Still for Single Tools—Prices Firmer and One Advance Reported —Some Substantial Crane Buying Noted

NEW inquiry for machine tools and shop equipment continues to come out in pleasing volume but orders, in the majority of instances, still are confined to single installations and these generally of the secondhand class. However, the single orders are numerous indicating that manufacturers are adding equipment as their plant operations broaden. In some cases manufacturers who have placed machine tool equipment on the market have withdrawn this and put it in production.

During the week two additional railroad lists were added to the number already in the market. One is from the Erie and the other from the Wabash railroad. The New York Central railroad as well as the numerous other roads which entered the market during the past three months, still are withholding purchases. Inquiries also have been received from the General Electric Co., the American Gas & Electric Co., the International Harvester Co., the Richmond, Cal., school board, the New Castle, Pa., school board and several others.

Purchases of size have not been numerous. Small equipment is being purchased on a fairly sizable scale by radio manufacturers and similar interests. It is thought that in some cases the coal strike is causing some tool users to postpone needed purchases. The Studebaker Corp. has started to buy some equipment but so far this has been all special machinery and no action has been taken toward filling its standard machine tool needs. During the week the Urban Motion Picture Corp. concluded its purchases which have aggregated $100,000. Prices are firmer. The first advance in some time is that of 20 per cent on turret lathes made by a Brazil, Ind., interest. Secondhand machinery prices also are stronger although still extremely low.

Demand for cranes and allied equipment continues to improve as shop operations expand. Several substantial orders were placed during the week including eight electric overhead cranes by the Otis Elevator Co. and 13 revolving shipbuilding cranes by the Wheeling Steel Corp. Several locomotive cranes were purchased by the Baltimore & Ohio railroad. Inquiries are numerous and include several for export.

Larger Inquiries Feature Eastern Tool Market

NEW YORK, June 6.—Outstanding in new inquiry in the local machinery market is a list of 25 machine tools for the Erie railroad. This equipment is for installation in several shops and includes grinders, drill presses, a boring mill and lathes. The New York Central railroad is inquiring for five machines, including an engine lathe and two 6-foot radial drills. Another sizable inquiry is that of the American Gas & Electric Co., 30 Church street, involving two engine lathes, a turret lathe, a drill press, a 10-inch floor grinder, a hack saw, and a milling machine. The General Electric Co., Schenactady, N. Y., has entered the market for a punch press and a tie rod press for its Ft. Wayne, Ind., plant.

The Franklin Mfg. Co., Syracuse, N. Y., is figuring actively on machinery for its new plant, but so far its purchases have been confined to secondary equipment. It now appears likely that no formal list will be brought out. The Bartlett-Hayward Co., Baltimore, has purchased a bevel shear and a 5-foot radial drill, and the Urban Motion Picture Corp., Irvington-on-the-Hudson, N. Y. closed on a few machines, completing its equipment purchases, which over the past several weeks, have aggreated more than $100,000.

The first advance to be reported in some time came this week in a 20 per cent increase in turrent lathes by the Wood Turret Machinery Co., Brazil, Ind.

Several substantial orders featured the crane market. The Otis Elevator Co. is closing on eight electric overhead cranes for its plant in Yonkers, N. Y., the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., reported as receiving a portion of this business. The list, according to original specifications, called for two 3-ton electric cranes, with 32-foot spans; one 7½-ton crane, with 18-foot span, one 10-ton crane, with 28-foot span; and three or four 2-ton cranes, with 16 to 20-foot spans.

Another order called for one 10-ton electric crane, with 60-foot span, and two 5-ton cranes, with 50-foot spans, for Egleston Bros. & Co., 166 South street, New York, the equipment to be installed in their plant at Long Island City. The award went to the Niles-Bement-Pond Co., 111 Broadway, New. York, which also booked orders for one 200-ton and one 15-ton electric overhead cranes.

Single Tool Sales Still Rule

CLEVELAND, June 6.—Sales of machine tool and shop equipment in this district still are confined in most cases to single tools. As has been the case for some time past, however, these orders are numerous and dealers are satisfied with the business being done. Little new machinery is being moved practically all of the orders being for secondhand equipment. Contrary to reports from other sections of the country, dealers here report there still is a considerable amount of used equipment available at low prices, although prices are firmer than they were. New tool prices are also firmer and while some users have been postponing purchases in the hope of more reductions, it appears the tendency at the present time is in the other direction.

Some of the sales reported during the week just past

included one of five automatics, another of an arbor press and a tool and cutter grinder. In addition there were numerous single tool sales of practically every class of equipment, no one line of machinery appearing to be more in demand than another. During the week the Empire Machinery Exchange Co., Cleveland, purchased the entire machinery and equipment of the Federal Machine Products Co., Cleveland, which includes a 3-foot radial drill, a 28-inch shaper, a 17-inch x 8-foot lathe, two tool and cutter grinders and an arbor press. In addition the equipment includes motors, hangers, line shafting, belting, vises, drills, reamers, etc. Dealers throughout this district are interested in the auction this week of the equipment of the Metal Parts Mfg. Co. Cleveland, which will include screw machines, punch press and general tool room equipment.

Inquiries continue quite numerous. While the exceptionally large ones are noticeably absent from this market dealers report they are kept busy following up the small ones which are current. General manufacturing operations are steadily increasing and this expansion is bringing out considerable inquiry. Many companies which had been offering some of their tools for sale have withdrawn them from the market and placed them in production.

Buying Improvement Is Noted

CHICAGO, June 6.—While inquiry and selling in the machine tool market is greatly improved the improvement is not evenly distributed. While one dealer in Chicago finds May yielded a total of sales equal to any three months in the past two years, excluding April, some other dealers find total sales for the month about equal to April, which was a good month. This condition results from bunching of one or two fairly large sales on the part of the former. The demand for equipment is diversified, and the market generally firm and established. There appears to be more shopping on the part of prospective buyers who are making the rounds to inspect needed equipment. Secondhand machinery still is in evidence but apparently is not plentiful in the lines now most in demand, which is helping sales somewhat. Buying by the Studebaker Corp. for its enlarged plant has not preceded beyond special tools requiring longer time to build and standard equipment is not yet being placed. September delivery is desired by this buyer. The International Harvester Co. is beginning to inquire for some equipment of miscellaneous character after being entirely out of the market for a year or more. The Wabash railroad has issued a list.

Machine Tool Users Defer Action

PITTSBURGH, June 6.—Equipment users continue to withhold action on orders but are active as inquirers. This refers particularly to machine tools and sellers of the latter believe the buying movement which has characterized the crane field for some weeks past soon will be extended to machine tools. The feature of the crane market this week is the purchase by the Wheeling Steel Corp. of 13 revolving shipbuilding cranes from the United States government. These will be utilized in loading and unloading barges at its Ohio river plants. The Northern New York Utility Co., Inc., Watertown, N. Y., closed on a 50-ton 2-motor electric traveling crane with 30-foot span, equipped with two 25-ton trolleys, through the Pittsburgh office of the Northern Engineering Works, Detroit. A pipe producer closed on a 10-ton Shaw crane with 5-ton auxiliary for shipment to an Ohio point and Pawling & Harnischfeger Co. received an order for a 10-ton crane from the Oil Well Supply Co., Oil City, Pa. The Pittsburgh Reinforced Brazing & Machine Works has asked for revised proposals on its two cranes and the Greenville Steel Car Co., Greenville Pa., has deferred action on its 10-ton. The Universal Steel Co. is expected to purchase a bridge for a trolley it now has and a trolley for a bridge already in its plant at Bridgeville, Pa. A few verbal orders have been placed for cranes and hoists with the Shepard Electric Crane & Hoist Co., details on which will be issued later. This crane builder received the order for several of the smaller cranes and hoists on the list of the Otis Elevator Co.

Buying enthusiasm is absent from the machine tool market. Numerous inquiries are current, mostly for single installations, and in many cases delay in closing is attributable to the coal strike. One large list has been revived for the new Junior High school, New Castle, Pa., which has been projected for three years. This list involves 20 items, including several engine lathes, some woodworking machinery, etc., and now will be pushed to conclusion. Several school lists are active since the desire is to buy the equipment in June and July and have it ready for the September school term. Two others about to buy equipment are located in West Virginia. A West Virginia user closed this week on a 16-inch lathe and another out-of-town user purchased a heavy squaring shear, motor drive, while one in Pittsburgh bought a 2-inch pipe machine. One inquiry calls for a face grinder. No railroad lists are current although within the next few weeks a number of roads are expected to enter this market.

Single Tools Are In Demand

SAN FRANCISCO, June 2.—During the past two weeks little improvement was noted in the local market for new machine tools and equipment. Trade remains of a piecemeal kind, with purchasers picking up one or two machines at a time and preferring secondhand machinery for the advantage in price. There is still a large amount of used equipment on the market. Conditions in the general metalworking industry are improving and this increased rate of operation is expected to bring out a broader demand for equipment. General intrest in radio work has resulted in an unprecedented demand for small, light tools. The Southern California Gas Co., General Petroleum Co., and Union Oil Co. during the past week each purchased a pipe machine. An interest in the southern part of the state bought a 19 x 12 inch heavy duty lathe. The General Petroleum Co. has ordered a 3500 pound steam hammer. The Richmond schools are in the market for a planer, a gap lathe, an 18-inch engine lathe, a 24-inch shaper, and a sensitve drill press. The city of Los Angeles opened bids on May 26 for a 4-foot radial drill.

While orders for cranes are not heavy the market reflects the betterment reported in other lines and dealers expect an active demand. The Colby Steel & Engineering Co., Seattle was awarded a 5-ton traveling hammerhead crane with 95-foot span for the Port of Grays Harbor. The Britiannia Smelting Co., Vancouver, B. C., purchased a Niles 5-ton gantry crane. Pawling & Harnschfeger were low biders on a monorail system for the Pacific Spruce Co., Portland, Ore. The Southern California Edison Co. has purchased a 150-ton crane. The Bly Stone Co., Los Angeles, has bought two 25-ton cranes.

Order Volume is Restricted

MILWAUKEE, June 6.—Leaders in the metalworking equipment trades report the volume of business is still restricted but sales are increasing. The inquiry remains confined to single tools or small lots which usually develop into a scattered placement of orders. In Milwaukee, industries continue their progress toward betterment. The establishment of new industries is going forward steadily. Em-

g the past week announcement was made that the Clay-urn Process Corp., manufacturing printing machinery, has ught a site in Milwaukee for a new plant estimated to st $400,000 to $500,000. A new mill group involving $750,-00 will be erected at Neenah, Wis., by the Valley Paper ills Inc. With the improvement in orders, numerous large ompanies are finding it necessary to issue new securities to roperly finance themselves. The issues are meeting a good esponse. Most of these companies will purchase some quipment. The railroads are being depended upon to help ive tool business an impetus from now on.

Tool Demand Is Unchanged

TORONTO, Ont., June 6.—Business in the machinery and tool market is holding to the same level as that of the past two or three weeks. Dealers and manufacturers say present demand is confined to small buying. The number of prospective buyers who may enter the market soon is large. Enlargements and new plant construction is progressing and it is the general opinion of those interested that considerable equipment will be required during the next two or three months. Railroads and car shops are doing little in the equipment buying line but some good business is coming from automobile manufacturers. Municipal governing bodies continue to furnish a large part of the demand and according to the prospective activities in sight buying from this source will continue. The town council of Thessalon, Ont., will construct a hydroelectric power plant. Bids will be called in the early future. The city council, Hull, Que., Theodore Lanctot, engineer, will spend $55,000 on additions to its waterworks plant. La Cie Electrique de Papineauville, Papineauville, Que., will build a power house.

In addition to works proposed by municipal governments many private companies are preparing to start work on sawmills, foundries, manufacturing plants in general for which equipment will be required.

While it was expected that the Fielding budget recently brought down in the house of commons in which a number of tariff changes were announced, would have some effect on machinery, it now appears the slight reductions announced will be more than offset by the increased sales tax which went into effect at that time.

Machinery Demand Is Encouraging

BOSTON, June 6.—The improvement in machine tool buying during the past week, while not striking, is encouraging, due to the fact that larger firms are entering the market. Textile interests, leather and shoe interests, hoist machine manufacturers and a long list of companies making parts for automobiles, for paper machinery and various other lines have been in the market. One Boston machine tool dealer reports a total of 18 tools sold during the week to wide scattered points covering all of the New England states. A Massachusetts manufacturer who has been in the market for some special punch equipment has placed this with New York dealers. Other sales include six tools to the city of Brockton for its sewer and street department and seven tools to a new company in Cambridge, which is to manufacture automobile parts. Another eastern Massachusetts manufacturer took a 16-inch x 8-foot lathe and a small shaper. Another manufacturer took four tools. Radio equipment companies continue to furnish a market for small tools and tool supplies. One dealer has been swamped with demand for drill attachments, chucks and similar items. Heavy machinery is quiet at the present time. Inquiries for several cranes still are out but there is no indication that these will be closed in the immediate future.

Construction and Enterprise

Concise and Timely Business Building Opportunities from the Field of Industry

East of the Mississippi River

BIRMINGHAM, ALA.—The Southern Signal Co. has been incorporated by J. E. Clough, George Lancy and others to manufacture railway signal devices.

NEW LONDON, CONN.—The Connecticut Radio Co. has been incorporated to make radio and other wireless apparatus with $50,000 capital by George B. Thompson, Charles Borland, Clayton B. Darrow and others.

MIAMI, FLA—The Huff Mfg. Co. plans a plant building, 35 x 120 feet.

CHICAGO—The Atwood Stewart Vacuum Machine Co. has increased its capital stock from $25,000 to $50,000.

CHICAGO—The Stover Rubber Co., 1409 South Michigan avenue, has been incorporated with 500 shares of no par value by E. E. Levy, M. C. Suhr and I. K. Stover. The company is represented by S. G. Levy, 105 West Monroe street.

CHICAGO—The Wilson Window Co., 78 South Dearborn street, has been incorporated with $50,000 capital stock to manufacture and deal in brass, iron, steel, etc., by H. D. Wilson, J. L. Kennedy, Fred Mitchell and G. H. Ashbrook. The company is represented by Charles Rudolph, 38 South Dearborn street.

CHICAGO—The Atlas Iron Works Corp., 351-9 West Fifty-ninth street, has been incorporated with $25,000 capital stock to manufacture and deal in iron work, machinery, etc., by Charles Chapman, T. F. Husmann, H. S. Olson. The company is represented by Charles S. Hamilton, 105 West Monroe street.

CHICAGO—The Betson Power Equipment Co., 208 East Ohio street, has been incorporated with $2000 capital stock to deal in and manufacture power plant specialties, etc., by Franklin H. Coney, Harry Dillenbeck, and Charles Z. Dillenbeck. The company is represented by C. Z. Dillenbeck, 208 East Ohio street.

CHICAGO—The Dunning Auto Devices Co., Inc., 68 West Monroe street, has been incorporated with $25,000 capital stock to manufacture and deal in automobile accessories, by J. N. Hayes, A. W. Mason, O. F. Klockgeter, and Charles P. Crane The company is represented by Tone & Challenger, 431 First National Bank buiding.

DECATUR, ILL.—The Decatur Bridge Co., 2100 East Eldorado street, has been incorporated with $1000 capital stock by W. M. Wood, E. B. Tyler and G. A. Caldwell. The company is represented by McMillen & McMillen, 602 Millikin building.

LA GRANGE, ILL.—The Kastory Mfg. Co., maker of automobile bodies, plans a 1-story plant addition, 100 x 125 feet, to cost about $40,000.

MARENGO, ILL.—The Elgin & Belvidere Electric railway contemplates building a 2-story power house, 50 x 105 feet, to cost about $50,000.

INDIANAPOLIS.—The Adams Rogers Co. plans a manufacturing plant.

BALTIMORE—The Edro Richardson Brass Co., 318 North Holliday street, has purchased a group of buildings which it is understood it will utilize as a plant.

BALTIMORE—The O. F. Reiter Mfg. Co., 200 North Holliday street, has been incorporated with $100,000 capital stock by O. F.

Reiter, Samuel Goldman and Eugene V. von Newendorf.

BALTIMORE—The Locke Insulator Corp. plans a plant building, 80 x 80 feet.

BALTIMORE—The Autovoix Co., 1006 Fidelity building, has been incorporated with $25,000 capital stock by John K. Mealy, Cornelius Roe and Bernard H. Conn.

ATTLEBORO, MASS.—The American Canbeen Co. has been incorporated with $50,000 capital stock to make fire extinguishers, etc., by Henry O. Girard, Lowell, Mass., Albert D. Laneville, Manchester, N. H., and William Cloutier.

BOSTON—Bids have been closed for a steel and reinforced concrete gasometer for the Boston Consolidated Gas Co.

BOSTON—The Arnold Electrical Mfg. Co. has been incorporated by Charles Earle Arnold, Arlington, Mass., and Herbert H. Richardson.

BOSTON—The Atlas Electric Corp. has been incorporated with $98,000 capital stock to make electrical specialties, etc., by Charles F. Cheney, Newtonville, Mass., John H. Hodson, Lynn, Mass., and Louis S. Shiro.

CAMBRIDGE, MASS.—The Simplex Wire & Cable Co., Boston, has let the contract for a factory addition, four stories, 90 x 100 feet.

GLOUCESTER, MASS.—The Murmac Mfg. Co., Inc., has been incorporated with $25,000 capital to operate a machine shop by John A. Moran, David F. Murphy and Morgan J. McSweeney, all of Salem, Mass.

LAWRENCE, MASS.—Rubwood, Inc., has been incorporated to make steel products with $800,000 capital stock by Harry N. Atwood, Boston, Frank M. Andrew and T. Edwin Andrew, both of Methuen, Mass.

LEOMINSTER, MASS.—The F. A. Whitney Carriage Co. has let the contract for a 3-story, 52 x 160-foot factory.

NEW BEDFORD, MASS.—The Air-Tite Mfg. Co. has been incorporated with $100,000 capital stock to make automobile accessories, etc., by Emile L. Galipeau, Aldege Chausse and Alfred R. Galipeau.

SPRINGFIELD, MASS.—The Kobert Supplementary Pulley Rim Co. has been incorporated with $75,000 capital stock by Frank P. Kobert, James A. Redemann and George R. Stobbs, Worcester, Mass.

SPRINGFIELD, MASS. — The Hampden Grinding Wheel Co. has been incorporated with $100,000 capital to take over the Hampden Corundum Wheel Co., by Willard P. Leshure, Frank S. Hatch, Longmeadow, Mass., and John M. Collins, West Springfield, Mass.

WESTFIELD, MASS.—The Foster Machine Co. has let the contract for four factory additions, the largest of which will be one story, 80 x 120 feet, and utilized as a machine shop.

DETROIT.—The Hupp Motor Car Corp., Milwaukee and Mt. Elliot avenue, plans a factory addition.

DETROIT—The Kermath Mfg. Co., 5880 Commonwealth avenue, maker of marine engines, plans a 2-story plant addition, 35 x 60 feet.

DETROIT—The American Nut Co. has been incorporated to manufacture nuts, screws, etc., with $25,000 capital stock by John T. Annis, 343 Lennox avenue, J. Conrad Breed and J. Chester Wilkie.

KALAMAZOO, MICH.—Part of the plant of the Reed Foundry & Machine Co. recently was damaged by fire.

ROCKFORD, MICH.—The Kirth Krause Co. plans a power house, 2-stories, 37 x 103 feet.

CAMDEN, N. J.—The Campbell Soup Co., 32 North Front street, plans a power house, 1-story.

GARWOOD, N. J.—The National Boiler Co. plans three foundry buildings.

NEWARK, N. J.—The Steam Automotive Co. has been incorporated with $100,000 capital stock by George L. Seymour, Emery P. Vanephs and George E. Doyen.

PERTH AMBOY, N. J.—The plant of the United Lead Co. recently was damaged by fire.

BINGHAMTON, N. Y.—The Tichener Iron Works, Inc., plans an extension to its plant.

BUFFALO—The Buffalo Boiler Screen Co. has been incorporated with $100,000 capital stock by P. H. F. Spies, F. X. Irr and J. E. Cunningham. The company is represented by W. J. Bullion.

BUFFALO.—Maccon Products, machine shop, has been incorporated with $100,000 capital stock by C. J. Connor, H. J. McCauley and W. H. Lee. The company is represented by Timmerman & Timmerman.

HUDSON, N. Y.—The Empire Tube & Steel Co., College Point, L. I., plans a plant, 1-story, 100 x 302 feet.

JOHNSON CITY, N. Y.—A 1-story, 50 x 150-foot machine repair shop will be erected here by Boland & Bartlett, at a cost of $20,000.

LEWISTON, N. Y.—The American Super Power Corp. has been incorporated with $10,000 capital stock by E. W. Ballard, P. T. Brady and E. C. Randall. The company is represented by J. B. Scovell, attorney.

NEW YORK—The Chupurdy Auto Coach Works has been incorporated with $15,000 capital stock by H. R. Chupurdy, P. R. DeBracke and C. J. Herbert. The company is represented by E. R. Chupurdy, 221 West Fifty-third street.

ROCHESTER, N. Y.—The Empire Blower Co. has been incorporated with $10,000 capital stock by E. B. and G. N. Keyes and H. Garner. The company is represented by J. F. Kinney, attorney.

SYRACUSE, N. Y.—The Electdrive Mfg. Co. has been incorporated with $15,000 active capital stock by C. L. Amos, E. M. Larkin and F. B. Conway. The company is represented by W. Byrne.

WATERVLIET, N. Y.—The London Turbine Co. is drawing plans for a plant, 2-stories, 40 x 80 feet, to cost about $150,000.

AKRON, O.—The Blake-Fitchburg Pumping Machine Co. is reported planning to move its plant to this city from Fitchburg, Mass.

AKRON, O.—The Ohio Pumping Machinery Co. has been incorporated with $100,000 capital stock by Huntie Gordon, Roy C. Witmer, Dow W. Harter, Charles C. Benner and Elarone Carney.

CINCINNATI—The Formica Insulation Co. recently increased its capital stock from $100,000 to $150,000.

CLEVELAND—The Iten Fibre Co. has been incorporated with $50,000 capital stock by Charles J. Iten, Paul Thompson, Engineers building, W. J. Dawley, E. K. Curtiss and George S. Myers.

LIMA, O.—The Buckeye Castings Co. plans four new plant buildings, including a new foundry, at an estimated ost of $25,000.

LYNCHBURG, O.—The Vaco Washer Co. has been incorporated with $1000 capital stock by E. O. Hayes, H. S. Pulse, J. T. Gibson, F. L. McDaniel and C. R. Simins.

MINERAL RIDGE, O.—The Ohio Oxygen Co. has purchased a site on which it is reported planning a factory building.

PORTSMOUTH, O.—The Portsmouth Stove & Range Co. plans a 3-story plant addition.

TOLEDO, O.—The Electric Auto-Lite Co. has been incorporated with $500 capital stock by Thomas H. Tracy, C. D. Welles, Frank M. Cobourn, Paul T. Phillips and S. E. C. Moor.

PHILADELPHIA—The Ballinger Co. has opened bids for a machine shop at 1539 Wood street.

PHILADELPHIA—Otto Hoffman has awarded a contract to Otto Maltz & Son, for a $16,000 machine shop.

PHILADELPHIA—The Fidelity Machine Co., has awarded the general contract for a $70,000 factory building to A. W. Hirreff.

PHILADELPHIA—The Philadelphia Electric Co. has awarded a contract to Stone & Webster, for a $75,000 power plant addition.

PHILADELPHIA.—Thomas Savill's Sons are having plans drawn for a foundry, 1 story, 40 x 49 feet.

PHILADELPHIA.—F. Romano, 819 Fitzwater street, plans a forge and machine shop, 1-story, 24 x 35 feet.

PHILADELPHIA—Alfred Box & Co., Inc., will close bids shortly on a machine and pattern shop. Clarence E. Wunder is architect.

PHILADELPHIA—The Philadelphia & Reading railway plans a 2-story warehouse, 100 x 157 feet to be equipped with freight-handling machinery.

PHILADELPHIA—The general contract for a $35,000 factory building for the Heintz Mfg. Co., has been awarded to the William F. Newberry Co.

PHILADELPHIA—The general contract for a $250,000 warehouse for the Baltimore & Ohio railroad has been awarded to the Turner Construction Co. The structure will be eight stories.

PITTSBURGH—The Star Ornamental Iron & Wire Co. has been incorporated with $25,000 capital stock by H. Blum, George Graszl and R. A. Harris.

POTTSTOWN, PA—The Vulcweld Rubber Co. of this city has purchased property at Limerick, near here, for a tire tube plant.

RIDGWAY, PA.—The Keystone Power Corp. plans a power plant addition, 1-story, 100 x 100 feet.

PROVIDENCE, R. I.—The Automtaic Mesh bag Co. has been incorporated with $200,000 capital by Edwin Speidel and Albert Speidel, both of Cranston, R. I., and William Thornley.

PROVIDENCE, R. I.—The Davis-Jones Insulated Wire Co. has been incorporated with $80,000 capital by David S. Davis, George T. Jones, Pawtucket, R. I., and John F. Murphy, West Warwick, R. I.

CHATTANOOGA, TENN—The Sommerville Iron Works is reported planning plant improvements.

JOHNSON CITY, TENN.—The Cressman Tube & Tinning Co. has increased its capital stock from $15,000 to $50,000.

KNOXVILLE, TENN.—The Fire Grate Radiator Heating Corp. has been incorporated

ith $500,000 capital stock, by C. F. Hodges, S. Hodges, and others.

KNOXVILLE, TENN.—The Kinney Chemical Co., 727 Broadway, plans a factory building.

BRATTLEBORO, VT.—The Presbrey-Leland Co., Barre, Vt., has let the contract for a story, 135 x 265-foot granite cutting shed, 60 x 90-foot machine shop and a 30 x 50-foot office building at an estimated cost of $100,000.

ALEXANDRIA, VA.—The Webber Appliance Mfg. Corp. has been incorporated with $50,000 capital stock by R. F. Webber, Paul Dulaney and others.

MARIBEL, WIS.—About $75,000 will be spent by the Green Bay Sand & Gravel Co. in equipping its pits here with crushing and washing machinery, drag line cable, etc. The work will be done by the Good Roads Machinery Co., 6 North Michigan avenue, Chicago.

MILWAUKEE—A charter has been granted to the Non-slip Pulley Covering Co. to manufacture and deal in transmission specialties. There are 2200 shares without par value, the incorporators including William L. Davidson, C. H. Bostwick and E. M. Pelton, all of Milwaukee.

MILWAUKEE—The Wetmore Mechanical Laboratory Co. has been incorporated with a capital stock of $5000 to succeed to a business of similar name, with factory at 29 Michigan street. The principal lines are mechanical tools, reamers, etc. C. P. Wetmore, former president of the Wetmore Reamer Co., is head of the new concern.

PHILLIPS, WIS.—A sawmill with electric drive, costing about $150,000 and having a daily capacity of 200,000 feet, will be erected by the Kneeland-McLurg Lumber Co., in place of the plant damaged by fire May 19.

PRAIRIE DU CHIEN, WIS.—The Thomas Heating Co., Racine, Wis., is the successful bidder for equipping the new central power and heating plant to be built by Campion college here at a cost of about $50,000.

RACINE, WIS.—A 1-story factory building, 130 x 140 feet, U-shaped, will be built by the Belle City City Incubator Co. for its sheet metal and shipping departments. It will cost about $65,000 complete. J. V. Rohan is president and general manager.

RACINE, WIS.—Between $175,000 and $200,000 will be spent by S. C. Johnson & Sons, Inc., of Racine, Wis., in enlarging its factory, manufacturing paints, varnish, waxes, polishes, etc., for the furniture and automobile trades. Plans have been adopted for three new buildings. A new varnish plant will be three stories, 60 x 90 feet; the main factory will be enlarged by a 3-story addition, 62 x 162 feet, and a new tank storage house, 40 x 60 feet, two stories high, will be provided.

SOUTH MILWAUKEE, WIS.—Bids are being taken by Mathew Potter, president of the board of education, for remodeling the first and basement floors of the First ward school into a vocational institute.

SPARTA, WIS.—Bids for the erection of a $250,000 junior and senior high school in combination with a vocational institute are being taken by Dr. S. D. Beebe, president of the school board. Architects Parkinson & Dockendorff, La Crosse, Wis., are supervising the work.

West of the Mississippi River

SUPERIOR, ARIZ—The Magna Copper Co. plans a smelter.

LOS ANGELES—The Hoffman Hardware Co. plans a 4-story warehouse.

OAKLAND, CAL.—The Westgate Metal Products Co., recently organized with $2,500,000 capital stock, plans to establish a plant for the manufacture of iron and steel castings, etc. B. I. Marshall and A. T. Burch, 78 El Camino street, are officers of the company.

SHREVEPORT, LA.—The Cunningham Machine Works has been incorporated with $75,000 capital stock by L. T. Cunningham and others.

KANSAS CITY, MO.—The King Products Co., refrigerators, has been incorporated with $600,000 capital stock by J. F. Wehner, Walter Mayer and George A. Tabuas.

LEES SUMMIT, MO.—White's Metal Co. has been incorporated by J. E. V. and M. K. White to manufacture metals.

OKLAHOMA CITY, MO.—The Radio Gas Stove Co. has been incorporated with $10,000 capital stock by Charles V. Stuart, Guy Miller and J. J. Everett.

ST. LOUIS—The Ideal Equipment Co. has been incorporated by Charles E. Roberts, J. B. Dale and Raymond Kaemmerer.

ST. LOUIS—The Rowling Mfg. Co. plans a factory addition, 3-stories to cost about $75,000.

ST. LOUIS—The Ideal Equipment Co. has been incorporated by Charles E. Roberts, J. B. DALE and Raymond Kaemmerer.

BEAUMONT, TEX—The Service Foundry Co. plans a foundry and pattern shop.

HOUSTON, TEX—The Davis-George Mfg. Co., sheet metal, has increased its capital stock to $1,000,000.

SAN ANTONIO, TEX—The Claussen Lock & Safe Co., 616 Market street, recently was organized to manufacture locks, etc.

New Business in Canada

GANANOQUE, ONT.—Radio Devices, Ltd., has been incorporated with $40,000 capital stock by John J. Davis, Eldon R. Strabler and William B. Mudie.

GALT, ONT—Newlands & Co., Ainslee street, has had plans prepared for a plant addition.

HAMILTON, ONT.—C. P. Thompson, chief engineer, of the Koppers Co., has been conferring with the Hamilton harbor commission, where he proposes to erect a new coke oven plant for the United Gas & Fuel Co.

HUNTSPILLE, ONT.—The entire plant of the Muskoka Wood Mfg. Co. was damaged by fire May 29.

KINGSTON, ONT—The Thomas D. Watson Co. has started work on a plant which will include a foundry and machine shop. The foundry will be 70 x 110 feet and the machine shop, 70 x 170 feet. The foundry will be equipped with a 12-ton cupola.

KITCHENER, ONT.—J. Walter & Sons, manufacturers of wood fiber products, will erect a building 100 x 200 feet.

LONDON, ONT—Thomas Terry, 150 Fullerton street, has let the general contract for a garage and machine shop to cost about $25,000.

LONDON, ONT.—Wells Motors, Ltd., has been incorporated with $150,000 capital stock by George W. Wells, Walter Wells and Alexander Wells.

NIAGARA FALLS, ONT.—The Falls Machinery & Supplies, Ltd., has been incorporated with $40,000 capital stock by Stanley R. Frost, John C. Gardner and Albert W. Tubbs.

ORILLIA, ONT.—The Canadian Electric Castings Co., Ltd., is erecting a new building.

ORILLIA, ONT.—The Fisher Motor Co., Ltd., is taking over a new building for the manufacture of die castings and metal stampings.

PETERBORO, ONT—The general contract for a factory building to cost $180,000 has been let by the Western Clock Co.

SIMCOE, ONT.—The Non-Freeze Battery Mfg. Co., Ltd., has been incorporated with $75,000 capital stock by Roy W. Wallace, Charles A. Austin and Johnathan C. Austin.

TORONTO, ONT.—Simples Products, Ltd., has been incorporated with $50,000 capital stock by Charles B. Nasmith, Robert Fennell and Joseph L. Shannon.

TORONTO, ONT.—Radio Equipment & Supplies, Ltd., has been incorporated with $250,000 capital stock by William K. Murphy, Hugh R. Donald and Richard J. Wilkinson.

TORONTO, ONT.—Hydrostatic Jacks, Ltd., has been incorporated to manufacture devices, etc., with $40,000 capital stock by Edwin F. Davis, Charles R. Vannatter and John Marshall.

TORONTO, ONT.—Good Housekeeping Appliances, Ltd., have been incorporated to manufacture and deal in gas, electric and other appliances, machinery, equipment, etc., with $100,000 capital, by Walter H. Cheadle, Charles H. Willson, James L. Shaw and others.

WINDSOR, ONT.—The Jewett Radio-Phonographs, Ltd., has been inorporated with $1,000,000 capital stock by Arthur B. Mortimer, Edith M. Carruthers, and others.

WELLAND, ONT—The Lackawanna Tube Co. is equipping a plant here for the manufacture of boiler tubing, etc.

WELLAND, ONT.—The British Empire Cutlery Corp. has taken over the plant of the Fulton Motors, Ltd., and will manufacture cutlery specializing in scissors.

DRAGON, QUE.—The Northern Explosives, Ltd., capitalized at $1,500,000, has started manufacturing operations.

MONTREAL, QUE.—Ginsberg Motor Co., Ltd., has been incorporated with $500,000 capital stock by Peter Bercovitch, Robert L. Calder, and Adolph Gardner.

New Trade Publications

MAGNETIC CHUCKS.—The O. S. Walker Co., Inc., Worcester, Mass., has published a 16-page illustrated booklet in which magnetic chucks, rectangular, swivelling and vertical face types, are described and illustrated. In these chucks the single coil or single magnet type of construction is the prevailing feature of design.

TRANSFORMERS.—The Allis-Chalmers Mfg. Co., Milwaukee, has published a 12-page illustrated booklet in which distribution transformers are described and illustrated. These transformers have ratings of 200 kilovolt amperes and are suitable for lighting or power purposes. They are oil immersed and of the self-cooled outdoor type.

SANDBLAST EQUIPMENT.—The Hoevel Mfg. Corp., Jersey City, N. J., has published a 24-page looseleaf booklet in which sandblast equipment and accessories are described and illustrated. The equipment includes hose sandblasts, barrel sandblast machines, table sandblast machines, sandblast rooms and cabinets and special sandblasts for all purposes. The various types of machines are described in detail and complete specifications are given.

WOODWORKING MACHINERY.—The American Woodworking Machinery Co., Rochester, N. Y., has published a 100-page illustrated booklet in which woodworking machinery for pattern shops is described and illustrated. Some of the machines described include band saws; saw filing, setting and jointing machines; scroll saws; jig saws; boring and mortising attachments; saw benches; planers; moulders; shapers, etc. Each machine is described in detail and specifications are given.

INSPECTION SERVICE.—The Pittsburgh Testing Laboratory, Pittsburgh, is circulating a bulletin in which it outlines the service which it offers in connection with the inspection of bridges, rails and track fastenings. In the former case the service embraces complete progressive inspection in the mills during manufacture, in the shop during fabrication and in the field during erection. Likewise, in the inspection of rails the inspectors scrutinize the railmaking process from the open hearth to the shipping track. One page of the pamphlet is devoted to the service offered by the company's inspection service.

OVENS.—The Foundry Equipment Co., Cleveland, has published a 44-page illustrated booklet in which ovens for cores and molds are described and illustrated. These ovens are built for operation with portable racks, rolling drawers, shelves, cars, or combinations of these. In general they are of brick construction but they are also available in the semiportable types with housings built of insulated steel panels. These ovens are built for operation with any kind of fuel, coke, oil, gas, powdered coal, electricity, etc. Complete details of construction are given and the illustrations show a number of actual installations.

LAMINATED PRODUCT.—A 10-page circular containing general information and technical data on a new laminated product for gears and pinions is being circulated by the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa. The new material is self-sustaining and may be machined in the ordinary manner into standard and special type gears and pinions for tools and equipment. The product is laminated from a specially treated woven fabric and by means of the various processes through which it passes, it acquires a homogeneous structure having desirable physical properties. Its development is the result of a persistent demand for silent gear drives.

POWER PLANT EQUIPMENT.—The Williams Gauge Co., Pittsburgh, is circulating a 16-page booklet in which equipment for power plant service is described. One page is devoted to the description of the company's safety feed water regulator which combines in a single unit a feed water regulator and a positive high and low alarm column, thus adding to the general efficiency of the boiler plant and assuring safety of operation. A description of the company's standard regulator suitable for all types of boilers also is presented, together with dimensions. The rugged construction and careful design of a high and low alarm column also is shown in addition to a ball-type gage cock, a steam operated trap, steam pump governors, etc.

Industrial Business Changes Recently Announced

NEW YORK district sales offices of The National Tube Co. and Lorain Steel Co. have been moved from 30 Church street to the United States Steel Corp.'s building at 71 Broadway. The New York district offices of the Carnegie Steel Co., American Sheet & Tin Plate Co. and part of the New York offices of the American Bridge Co. also will be moved shortly to 71 Broadway. For the present, the New York offices of the American Steel & Wire Co., the United States Steel Products Co. and part of the offices of the American Bridge Co. will remain at 30 Church street.

* * *

The Donald Sales & Mfg. Co., Milwaukee, is a new $25,000 corporation organized by Henry R. Donald, Arthur J. Donald and James T. Guy, attorney, to take over the business under a similar name conducted for many years at 259-261 South Water street, manufacturing founders' plating and polishing machinery.

* * *

Executive quarters of the United States Ferro Alloys Corp., New York, have been enlarged and moved into the Liggett building, 41 East Forty-second street, that city.

* * *

The Mechanical Appliance Co., 133 Stewart street, Milwaukee, has changed its name to the Louis Allis Co. It manufactures electric motors, dynamos, etc.

* * *

Frank Gordon Haff has bought the half interest of Arthur A. Allard in the Southbridge Foundry Co., Southbridge, Mass., and succeeded him as treasurer of the company.

* * *

Business of the J. L. Austin Mfg. Co., grinders and grinding machinery, 419-423 Van Buren street, Milwaukee, has been incorporated without change of name. The capital stock is $50,000. J. L. Austin, founder of the business, is president and general manager.

* * *

Henry L. Exstein Co., Inc., is the name of a company formed by Henry L. Exstein to deal in scrap and new and relaying rails. Offices have been taken in the Woolworth building, New York.

* * *

Appointment of the McMinn & Quigley Steel Co., 40 Central street, Boston, as New England representative of the Warren Iron & Steel Co., Warren O., is announced by R. D. Love, manager of sales of the Warren Co.

* * *

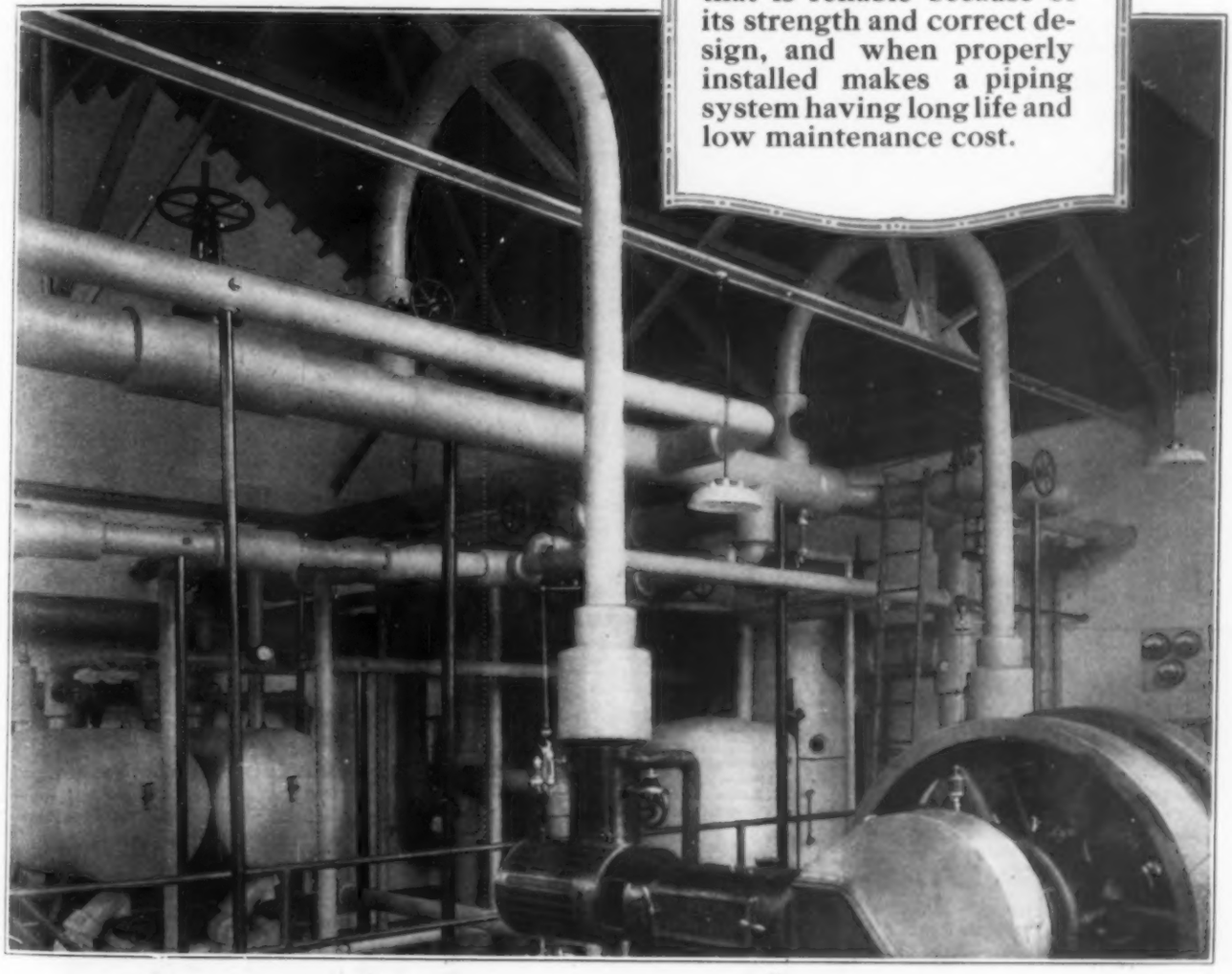
Branch offices have been opened in Los Angeles by the Firth-Sterling Steel Co., McKeesport, Pa., under E. S. Jackson & Co., 336 East Third street, as agents. William Ely Nelson, who has been selling the Firth-Sterling steels for 20 years, is in direct charge.

OPERATING EFFICIENCY can be economically maintained with the use of dependable valves, fittings and piping equipment.

CRANE

Power Plant Equipment

is constructed of material that is reliable because of its strength and correct design, and when properly installed makes a piping system having long life and low maintenance cost.



We are manufacturers of about 20,000 articles, including valves, pipe fittings and steam specialties, made of brass, iron, ferrosteel, cast steel and forged steel, in all sizes, for all pressures and all purposes and are distributors through the trade of pipe, heating and plumbing materials.

SALES OFFICES, WAREHOUSES AND SHOWROOMS:

BOSTON, SPRINGFIELD, HARTFORD, BRIDGEPORT, ROCHESTER, NEW YORK, HARLEM, ALBANY, BROOKLYN, PHILADELPHIA, READING, ATLANTIC CITY, NEWARK, CAMDEN, BALTIMORE, WASHINGTON, SYRACUSE, BUFFALO, SAVANNAH, ATLANTA, KNOXVILLE, BIRMINGHAM, MEMPHIS, LITTLE ROCK, MUSKOGEE, TULSA, OKLAHOMA CITY, WICHITA, ST. LOUIS, KANSAS CITY, TERRE HAUTE, CINCINNATI

FOUNDED BY R. T. CRANE, 1855

CRANE CO.

836 S. MICHIGAN AVE.

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WORKS: CHICAGO AND BRIDGEPORT

INDIANAPOLIS, DETROIT, CHICAGO, ROCKFORD, OSHKOSH, GRAND RAPIDS, DAVENPORT, DES MOINES, OMAHA, SIOUX CITY, MANKATO, ST. PAUL, MINNEAPOLIS, WINONA, DULUTH, FARGO, WATERTOWN, ABERDEEN, GREAT FALLS, BILLINGS, SPOKANE, SEATTLE, TACOMA, PORTLAND, POCATELLO, SALT LAKE CITY, OGDEN, RENO, SACRAMENTO, OAKLAND, SAN FRANCISCO, LOS ANGELES

CRANE LIMITED — MONTREAL, TORONTO, VANCOUVER, WINNIPEG, CALGARY, REGINA, HALIFAX, OTTAWA.

CRANE-BENNETT, LTD. — LONDON, ENG.

You are cordially invited when in Atlantic City to make the Crane Exhibit Rooms (1105-1107 Boardwalk) your headquarters. We will be glad to receive any mail addressed to you in our care.

Iron and Steel Prices

Iron Ore

LAKE SUPERIOR ORES

Per Gross Ton Lower Lake Ports

Old range Bessemer, 55 per cent iron	$6.45
Mesabi Bessemer, 55 per cent iron	6.20
Old Range nonbessemer, 51½ per cent iron	5.70
Mesabi nonbessemer, 51½ per cent iron	5.55

PORT HENRY IRON ORE

Per Gross Ton, F.o.b., Port Henry

Old bed 21 furnace	$4.85
Old bed concentrates, 63 per cent	5.75
Harmony, cobbed, 63 per cent	5.75
New bed, low phos., 65 per cent.	8.50
Lump ore for fix	6.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 26½ to 28 cents per unit.

Indian 48 to 50 per cent c.i.f. Atlantic ports, nominal per unit.

Caucasian, 48 to 50 per cent, c.i.f. Atlantic ports, 27 cents per unit.

Fluor Spar

Washed gravel Kentucky and Illinois mines, per ton.....$16.00 to $17.50

Rivets

Structural rivets	2.25c
Boiler rivets, Pittsburgh	2.35c
Rivets ⅞-in. and smaller, Pittsburgh	70-10-10 off

Nuts and Bolts

NUTS

(Up to 1¼ and 1½ inches inclusive)

Hot pressed square or hexagon blank or tapped	$4.75 off list
Cold punched square or hexagon blank or tapped	$4.75 off list
Cold punched semifinished hexagon nuts ⅝-in. and larger	75-10-5 off
Cold punched semifinished hexagon nuts ⅞-inch and smaller	80-10-5 off
Case hardened, finished, hexagon	70 off

Price f.o.b. Pittsburgh, Packages of 50.

CARRIAGE BOLTS

⅜ x 6 inches, smaller and shorter

Rolled thread	65-5 off
Cut thread	60-5 off
Larger and longer	60-5 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	65-10-5 off
Cut thread	65-5 off
Larger and longer	65-5 off

(⅜ x 4 inches, cold punched nuts)

Cut thread	60 off
Larger and longer	60 off
Lag screws	65-10 off
Plow bolts Nos. 1, 2 and 3 heads	50-10 + 20 off
Tap bolts	30-10 off
Bolt ends with hot pressed nuts	65-5 off
Blank bolts	65-5 off
Rough stud bolts with nuts	50-10 off

Warehouse Prices

STEEL BARS

Boston	2.505c
Buffalo	2.60c
Chicago	2.38c
Cincinnati	2.50c to 2.75c
Cleveland	2.41c
Detroit	2.48c
New York	2.48c to 2.53c
Philadelphia	2.46c
San Francisco	3.25c
Seattle	3.25c
St. Louis	2.475c
St. Paul	2.66c
Los Angeles	3.25c

IRON BARS

Boston	2.505c
Buffalo	2.45c
Chicago	2.38c
Cincinnati	2.50c to 2.75c
Detroit	2.48c
New York	2.48c to 2.58c
Philadelphia	2.46c
St. Louis	2.475c

SHAPES

Boston	2.605c
Buffalo	2.70c
Chicago	2.48c
Cincinnati	2.60c to 2.85c
Cleveland	2.51c
Detroit	2.58c
New York	2.58c to 2.63c
Philadelphia	2.56c
San Francisco	3.25c
Seattle	3.25c
St. Louis	3.25c
St. Paul	2.76c
Los Angeles	3.35c

PLATES

Boston	2.605c
Buffalo	2.70c
Chicago	2.48c
Cincinnati	2.60c to 2.85c
Cleveland	2.51c
Detroit	2.58c
New York	2.58c to 2.63c
Philadelphia	2.56c
San Francisco	3.25c
Seattle	3.35c
St. Louis	3.625c
St. Paul	2.76c
Los Angeles	3.50c

NO. 10 BLUE ANNEALED SHEETS

Boston	3.305c to 3.48c
Buffalo	3.60c
Chicago	3.53c
Cincinnati	3.50c to 3.75c
Cleveland	3.15c to 3.25c
Detroit	3.48c
New York	3.48c
Philadelphia	3.40c
San Francisco	4.30c
Seattle	4.65c
St. Louis	3.625c
St. Paul	3.81c
Los Angeles	4.70c

NO. 28 BLACK SHEETS

Boston	4.90c
Buffalo	4.45c
Chicago	4.30c
Cincinnati	2.75c
Cleveland	3.90c to 4.00c
Detroit	4.23c
New York	4.35c
Philadelphia	4.25c
San Francisco	5.80c
Seattle	5.65c
St. Louis	4.395c
St. Paul	4.58c
Los Angeles	5.80c

NO. 28 GALVANIZED SHEETS

Boston	5.90c
Buffalo	5.45c
Chicago	5.30c
Cincinnati	5.10c
Cleveland	4.90c to 5.00c
Detroit	5.23c
New York	5.35c
Philadelphia	5.25c
San Francisco	6.65c
Seattle	6.65c
St. Louis	5.395c
Los Angeles	6.65c

BANDS

Boston	3.005c
Buffalo	3.20c
Chicago	3.13c
Cincinnati	3.10c to 3.35c
Cleveland	3.06c
Detroit	3.08c
New York	2.98c to 3.13c
Philadelphia	2.96c
San Francisco	3.90c
Seattle	3.75c
Los Angeles	4.15c

HOOPS

Boston	3.415c
Buffalo	3.35c
Cleveland	3.06c
Detroit	3.23c
New York	3.38c
Philadelphia	3.21c
Seattle	4.75c

COLD ROLLED SHAFTING

Boston (round)	3.30c
Buffalo	3.40c
Chicago	3.30c to 3.80c
Cincinnati (round)	3.25c to 3.35c
Detroit (round)	3.15c
New York	3.35c
New York (flats, squares and hexagons)	3.85c
Philadelphia (rounds)	3.20c
San Francisco	4.65c
Seattle	4.75c
Los Angeles	5.10c
Boston. flats, squares and hexagons	3.80c

Steel Pipe

Pittsburgh basing discounts, jobbers, carloads

Butt Weld

	Black	Galvanized
⅛-inch	54½	28
¼ and ⅜-inch	60	33½
½-inch	65	50½
¾-inch	69	56½
1 to 3-inch	71	58½

Lap Weld

2-inch	64	51½
2½ to 6-inch	68	55½
7 to 8-inch	65	51½
9 to 12-inch	64	50½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	69	56½

Lap Weld

2-inch	62	49½
2½ to 6-inch	66	53½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	50½	33
¼ and ⅜-inch	56	38½
½-inch	62	50½
¾-inch	67	55½
1 to 1½-inch	69	57½
2 to 3-inch	70	58½

Lap Weld

2-inch	62	50½
2½ to 4-inch	66	54½
4½ to 6-inch	65	53½
7 to 8-inch	61	47½
9 to 12-inch	55	41½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	51	40½
¾ to 1½-inch	54	43½
2 to 2½-inch	56	45½

Lap Weld

2-inch	50	40½
2½ to 4-inch	52	42½
4½ to 6-inch	51	41½
7 to 8-inch	47	33½

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers, carloads

THREADS AND COUPLINGS

Butt Weld

	Black	Galvanized
⅛ and ¼-inch	3½	+22½
⅜-inch	36½	18½
½-inch	42½	27½
¾-inch	44½	29½
1 to 1½-inch	44½	29½

Lap Weld

2-inch	39½	25½
2½ to 6-inch	42½	29½
7 to 12-inch	40½	27½

PLUGGED AND REAMED

Two points less than above

EXTRA STRONG, PLAIN ENDS

Butt Weld

⅛ and ¼-inch	+ 4½	+37½
⅜-inch	35½	23½
½-inch	42½	28½
¾-inch	44½	30½
1 to 1½-inch	44½	30½

Lap Weld

2-inch	40½	27½
2½ to 4-inch	43½	31½
4½ to 6-inch	42½	30½
7 to 8-inch	35½	23½
9 to 12-inch	30½	18½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+27	+39
¾-inch	+ 7½	+19½
1-inch	+23½	+35½
1¼-inch	+ 7½	+19½
1½-inch	+ 6½	+18½

Lap Weld

2 and 2½-inch	7½	14½
3 to 4-inch	12½	3½
4½ to 6-inch	11½	2½
8-inch	8½	

Boiler Tubes

L. C. L. discounts. C. L. 4-Point differential

STEEL

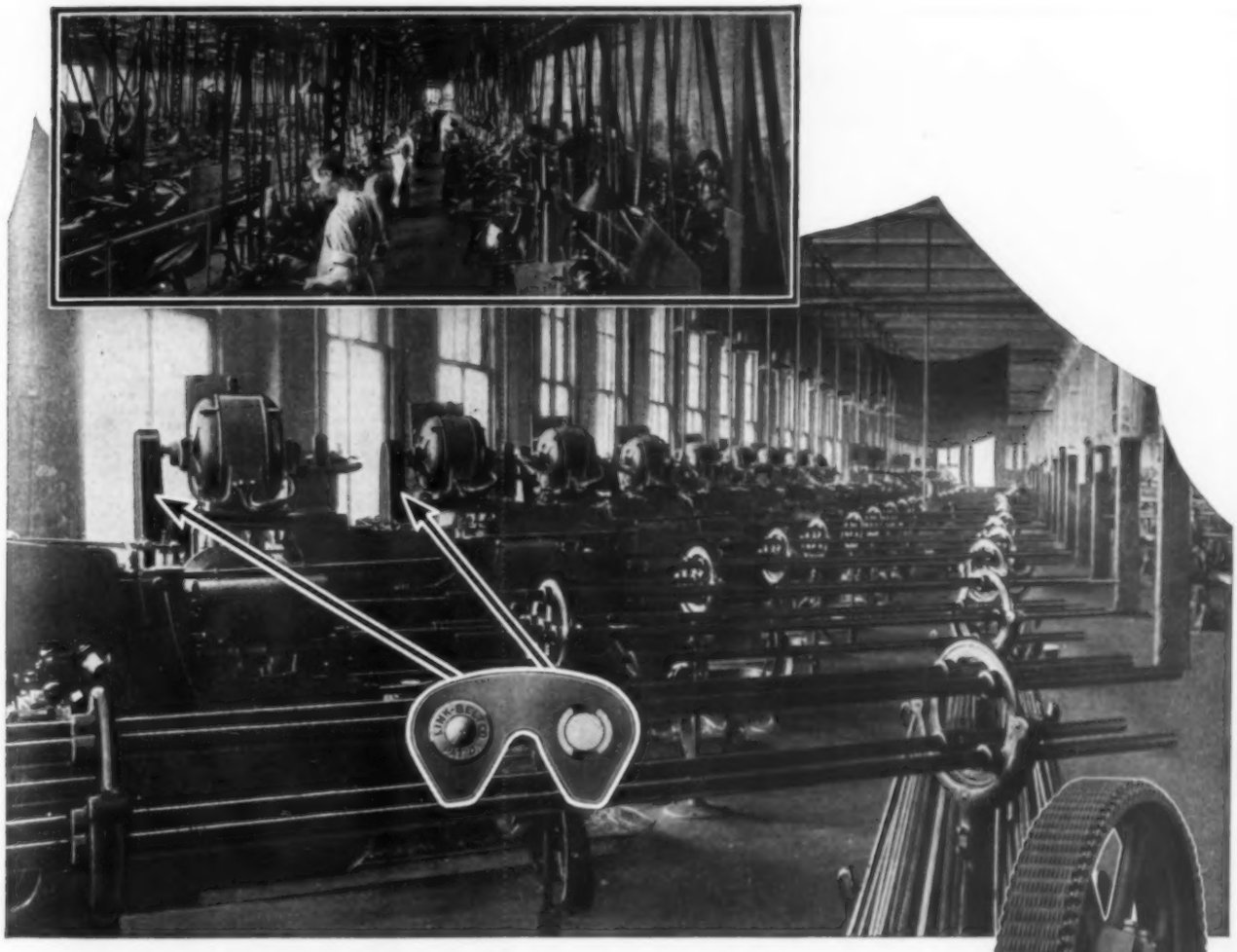
1¾-inch	22½
2 and 2¼-inch	37
2½ to 3-inch	48
3¼ to 4-inch	53

IRON

1½-inch	1
1¾-inch	11
2 and 2¼-inch	21
2½ to 3-inch	26
3¼ to 4½-inch	28

SEAMLESS

1¼-inch	17
2 to 2¼-inch	30
2½ to 3-inch	38
3¼ to 5-inch	43



WHICH DRIVE DO YOU USE?

HERE is shown a comparison between two methods of transmitting power. Above, flat belt drives; below, Link-Belt Silent Chain Drives individually applied.

Compare the performance of flat belt drives with the 98.2% efficient Link-Belt Silent Chain Drives. Compare the menace to workers and obstruction of light of the flat belt drives with the safety and clear overhead which the Link-Belt Silent Chain Drives give. Compare the details of the two scenes pictured above.

Let our engineers help you get better results from your power transmission equipment. Send for our specialist on your industry. Send for Data Book No. 125.

Flexible as a Belt—
Positive as a Gear—
More Efficient Than Either

LINK-BELT COMPANY

768

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Boston 9 - - 49 Federal St.	Huntington, W. Va. Robson-Prichard Bldg.	Portland, Ore., - - First and Stark Sts.	New Orleans - C. O. Hinz, 504 Carondelet Bldg
Pittsburgh - - 1501 Park Bldg.	Cleveland - - 429 Kirby Bldg.	San Francisco - - 168 Second Street	Birmingham, Ala. - - -
St. Louis - Central Nat'l Bank Bldg.	Detroit - - 4210 Woodward Ave.	Los Angeles - 163 N. Los Angeles St.	S. L. Morrow, 720 Brown-Marx Bldg.
Buffalo - - 547 Ellicott Square	Kansas City, Mo. - - 806 Elmhurst Bldg.	Denver, Lindrooth, Shubert & Co. Boston Bldg.	Charlotte, N. C. - J. S. Cothran, Com'l Bank Bldg.

In Canada - Canadian Link-Belt Co., Ltd., Toronto and Montreal — H. W. CALDWELL & SON CO., CHICAGO, 17th St and Western Ave. — NEW YORK, Woolworth Bldg. — DALLAS, TEXAS, 709 Main St.

LINK-BELT

Composite Market Record

Monthly Averages of Fourteen Iron and Steel Products, 1913-1922, Compiled by The Iron Trade Review.

1922	
Average for May	$36.49
May 31	36.64
May 24	36.62
May 17	36.60
May 10	36.50
May 3	36.08
April	34.42
March	32.97
February	32.86
January	33.35
1921	
December	33.99
November	34.71
October	35.46
September	35.34
August	35.99
July	38.14
June	41.87
May	43.32
April	43.84
March	45.37
February	48.81
January	51.98
Average for year	40.74
1920	
December	54.04
November	63.75
October	$68.61
September	69.28
August	68.93
July	68.29
June	67.89
May	68.26
April	67.49
March	65.47
February	65.63
January	59.40
Average for year	65.59
1919	
December	54.88
November	51.28
October	48.76
September	48.35
August	48.27
July	47.86
June	47.88
May	48.29
April	48.45
March	52.28
February	53.71
January	53.81
Average for year	50.32
1918	
December	57.24
November	55.67
October	57.53
September	$56.56
August	56.67
July	56.66
June	56.62
May	56.59
April	56.59
March	56.71
February	56.67
January	56.67
Average for year	56.68
1917	
December	56.68
November	58.29
October	67.75
September	83.18
August	89.69
July	89.56
June	82.66
May	73.96
April	66.48
March	61.07
February	56.76
January	55.10
Average for year	70.10
1916	
December	53.68
November	46.77
October	41.50
September	39.97
August	$39.67
July	38.37
June	39.63
May	39.78
April	39.13
March	37.18
February	35.63
January	33.66
Average for year	40.50
1915	
December	31.56
November	28.64
October	26.19
September	25.55
August	24.77
July	24.25
June	23.74
May	22.89
April	22.66
March	22.71
February	22.21
January	21.90
Average for year	24.76
1914	
December	21.58
November	23.39
October	$22.84
September	23.17
August	22.72
July	22.17
June	22.58
May	22.99
April	23.39
March	23.60
February	23.52
January	23.03
Average for year	22.92
1913	
December	23.29
November	24.02
October	24.91
September	25.55
August	25.97
July	26.34
June	26.78
May	27.34
April	27.74
March	27.93
February	28.05
January	27.96
Average for year	26.32

Iron and Steel Statistics

Tin Plate Production

Year	Tin plate Tons	Terne plate Tons	Total Tons
1908	524,448	77,090	601,538
1909	589,929	95,465	685,394
1910	725,411	84,092	809,503
1911	798,814	79,221	878,035
1912	982,830	95,698	1,078,528
1913	854,093	68,472	922,565
1914	969,892	73,098	1,042,990
1915	1,100,913	81,735	1,182,648
1916	1,276,113	107,088	1,383,201
1917	1,616,658	76,946	1,693,604
1918	1,608,124	42,689	1,650,813
1919	1,203,579	85,427	1,289,006
1920	1,539,977	69,112	1,609,089

Sheet Production

Year	Tons
1913	1,921,001
1914	1,668,644
1915	2,106,298
1916	2,492,794
1917	2,595,606
1918	2,176,537
1919	2,316,057
1920	3,133,217

Plate Production

Year	Sheared Tons	Universal Tons	Total Tons
1913	1,844,354	1,158,416	3,002,770
1914	1,346,308	766,133	2,112,441
1915	1,923,199	954,852	2,878,051
1916	2,453,150	1,224,234	3,677,384
1917	2,963,039	1,195,199	4,158,238
1918	3,885,126	1,234,782	5,119,908
1919	2,899,967	992,054	3,892,021
1920	3,505,364	1,249,769	4,755,133

Shape Production

Year	Gross tons
1908	1,083,181
1909	2,275,562
1910	2,266,890
1911	1,912,367
1912	2,846,487
1913	3,004,972
1914	2,031,124
1915	2,437,003
1916	3,029,964
1917	3,110,000
1918	2,849,969
1919	2,614,036
1920	3,306,748

Bar Production

Year	Gross Tons Iron Tons	Steel Tons	Total Tons
1908	685,233	1,301,405	1,986,638
1909	952,230	2,311,301	3,263,531
1910	1,074,163	2,711,568	3,785,731
1911	835,625	2,211,737	3,047,362
1912	944,790	2,752,324	3,697,114
1913	1,026,632	2,930,977	3,957,609
1914	563,171	1,960,460	2,523,631
1915	657,107	3,474,135	4,131,242
1916	993,948	5,236,354	6,230,302
1917	983,926	5,226,031	6,209,957
1918	846,898	5,395,851	6,242,749
1919	446,549	3,945,075	4,391,624
1920	663,032	5,467,208	6,130,240

Tube Production

	Iron	Steel	Total
1913	276,067	1,969,465	2,245,532
1914	212,147	1,525,557	1,737,704
1915	206,513	1,713,161	1,919,674
1916	278,117	2,372,941	2,651,058
1917	273,890	2,213,087	2,486,977
1918	202,958	2,087,521	2,290,479
1919	162,356	2,212,575	2,374,931
1920	199,673	2,803,052	3,002,725

Steel Rail Production

Year	Tons
1908	1,920,944
1909	3,023,845
1910	3,635,801
1911	2,822,556
1912	3,327,915
1913	3,502,780
1914	1,945,095
1915	2,204,201
1916	2,854,518
1917	2,944,161
1918	2,540,892
1919	2,203,843
1920	2,604,116

Freight Rates

Pig Iron

Mahoning and Shenango valleys to:

Cleveland	$1.96
Newark, N. J.	6.72
Boston	7.28
Philadelphia	6.32
Pittsburgh	1.96
Chicago	5.32
St Louis	6.44
Minneapolis, St. Paul	7.60

Buffalo to:

Albany, N. Y.	$2.52
New England (rail)	5.46
New York and Brooklyn (rail)	5.46

Virginia furnaces to:

Philadelphia	$5.74
New England	6.58
Brooklyn, Jersey City, Newark	6.16

Birmingham, Ala., to:

Boston	$10.665
Boston (rail and water)	7.65
Cincinnati	4.50
Chicago	6.66
Cleveland	6.66
Louisville, Ky.	4.12
Minneapolis, St. Paul	9.73
New York	10.265
Philadelphia	8.665
Pittsburgh	7.60
Savannah, Ga.	4.25
St. Louis	5.725

Chicago to:

Des Moines	$4.725
Minneapolis, St. Paul	3.375
Milwaukee	0.89
Moline, Ill.	1.89
Omaha	6.07
St. Louis	2.80

Ironton and Jackson, O., to:

Chicago	$5.32
Cincinnati	2.52
Cleveland	3.36
Detroit	3.64
Indianapolis	3.22
Minneapolis, St. Paul	8.40

Finished Material

Pittsburgh, carloads, per 100 pounds, to:

New York	$0.38
Philadelphia	0.36
Baltimore	0.35
Boston	0.405
Buffalo	0.295
Baltimore	0.35
Cleveland	0.24
Cincinnati	0.32
Chicago	0.38
Detroit	0.32
Minneapolis and St. Paul	0.66
Kansas City	0.815
Denver	1.32
St. Louis	0.475
New Orleans	0.515
Birmingham	0.765
Pacific coast (all rail)	1.665
Pacific coast (tin plate)	1.665

Iron and Steel Production

Compiled By THE IRON TRADE REVIEW

Pig Iron

	-Stacks- No.	In	Output— Total	Av. daily
1907				
January	376	311	2,174,801	69,509
February	374	308	2,047,036	73,109
March	377	304	2,186,709	70,539
April	378	327	2,226,708	74,223
May	391	329	2,291,030	73,904
June	392	341	2,237,420	74,580
July	396	335	2,253,243	72,685
August	397	329	2,243,656	72,376
September	399	329	2,174,148	72,471
October	401	314	2,359,690	76,119
November	398	226	1,820,558	60,685
December	398	154	1,234,733	39,830
Total			25,299,732	
1908				
January	398	139	1,081,813	34,316
February	401	150	1,086,809	37,476
March	398	154	1,229,856	39,672
April	398	146	1,155,122	38,504
May	396	145	1,168,002	37,677
June	395	154	1,106,300	36,876
July	397	166	1,228,604	39,632
August	399	181	1,366,019	44,065
September	399	189	1,416,252	47,208
October	400	200	1,573,824	50,764
November	402	212	1,582,314	52,744
December	403	221	1,723,664	55,602
Total			15,680,140	
1909				
January	406	234	1,787,473	57,683
February	407	233	1,682,470	60,088
March	406	229	1,822,024	58,793
April	406	224	1,731,406	57,687
May	407	236	1,866,757	60,218
June	408	240	1,929,929	64,334
July	409	258	2,088,620	67,375
August	412	278	2,232,642	72,021
September	413	297	2,378,655	79,186
October	413	309	2,589,681	84,001
November	414	311	2,532,740	84,425
December	416	314	2,682,702	86,539
Total			25,337,002	
1910				
January	416	311	2,599,995	83,871
February	417	311	2,429,525	86,747
March	417	310	2,588,736	83,580
April	418	291	2,477,700	82,590
May	421	206	1,871,388	60,367
June	420	271	2,288,279	76,276
July	420	254	2,158,124	69,617
August	422	244	2,103,793	67,864
September	420	234	2,048,461	68,282
October	421	230	2,086,205	67,297
November	421	218	1,910,385	63,679
December	421	193	1,779,899	57,192
Total			26,840,314	
1911				
January	421	210	1,766,658	56,985
February	421	226	1,781,285	63,617
March	421	236	2,165,764	69,867
April	421	220	2,044,904	68,163
May	421	206	1,871,388	60,367
June	421	202	1,773,282	59,109
July	423	196	1,776,108	57,294
August	423	206	1,921,832	61,995
September	423	216	1,973,918	65,797
October	421	214	2,092,061	67,486
November	421	214	1,999,100	66,637
December	422	215	2,032,301	65,558
Total			23,198,601	
1912				
January	421	227	2,052,806	66,220
February	422	235	2,098,796	72,372
March	420	237	2,411,529	77,791
April	421	239	2,377,621	79,254
May	423	243	2,503,341	80,753
June	424	242	2,433,737	81,125
July	422	245	2,402,567	77,502
August	423	255	2,500,163	80,650
September	419	262	2,444,454	81,482
October	422	280	2,683,645	86,569
November	423	289	2,639,562	87,985
December	423	291	2,777,292	89,590
Total			29,325,513	
1913				
January	423	297	2,287,800	89,929
February	423	306	2,778,670	92,095
March	423	278	2,562,823	89,123
April	421	297	2,754,353	91,812
May	421	285	2,716,825	90,865
June	422	283	2,816,883	87,229
July	422	264	2,658,275	82,525
August	424	260	2,537,018	81,839
September	425	258	2,594,098	83,137
October	425	244	2,439,924	81,933
November	424	225	2,529,960	74,322
December	424	191	1,976,138	63,746
Total			30,652,767	
1914				
January	423	199	1,879,336	60,624
February	423	219	1,888,607	67,450
March	423	232	2,341,551	75,534
April	422	212	2,261,501	75,383
May	422	198	2,097,019	67,646
June	422	193	1,904,566	63,486
July	422	187	1,955,324	63,075
August	422	187	1,996,483	64,403
September	422	180	1,882,718	62,757
October	422	162	1,767,227	57,007
November	421	150	1,501,269	50,042
December	421	154	1,495,325	48,236
Total			22,970,926	
1915				
January	421	165	1,591,324	51,323
February	421	179	1,666,592	59,521
March	421	190	2,046,280	66,009
April	421	197	2,114,518	70,484
May	421	207	2,255,157	72,747
June	421	221	2,369,932	78,998
July	421	234	2,563,311	82,687
August	421	246	2,774,825	89,510
September	420	266	2,834,342	94,478
October	420	276	3,120,340	100,656
November	421	285	3,035,235	101,174
December	421	295	3,201,605	103,278
Total			29,573,161	
1916				
January	421	304	3,171,878	102,319
February	421	312	3,078,548	106,157
March	422	315	3,327,630	107,343
April	422	320	3,225,496	107,517
May	423	321	3,364,584	108,535
June	423	325	3,213,818	107,127
July	419	316	3,221,127	103,907
August	419	317	3,197,838	103,156
September	419	326	3,208,041	106,935
October	419	328	3,508,180	113,167
November	420	322	3,317,805	110,593
December	422	309	3,184,178	102,715
Total			39,019,123	
1917				
January	422	310	3,159,839	101,930
February	422	317	2,649,935	94,641
March	423	331	3,255,813	105,026
April	425	333	3,328,061	110,936
May	425	340	3,413,677	110,119
June	427	347	3,260,234	108,675
July	429	351	3,337,442	107,659
August	431	355	3,238,970	104,483
September	431	344	3,140,742	104,691
October	433	354	3,296,286	106,332
November	434	344	3,198,597	106,620
December	435	321	2,885,380	93,077
Total			38,164,976	
1918				
January	435	294	2,403,227	77,523
February	435	319	2,318,242	82,794
March	438	338	3,209,996	103,548
April	437	351	3,273,355	109,112
May	437	360	3,451,884	111,351
June	437	353	3,316,148	110,538
July	437	364	3,408,584	109,954
August	439	371	3,378,479	108,983
September	438	364	3,413,223	113,774
October	437	364	3,482,392	112,335
November	437	360	3,347,844	111,595
December	435	351	3,434,114	110,602
Total			38,437,488	
1919				
January	435	330	3,306,279	106,654
February	435	311	2,943,347	105,270
March	435	279	3,088,023	99,614
April	435	216	2,474,374	82,479
May	433	197	2,107,729	67,991
June	433	199	2,114,028	70,467
July	434	240	2,424,212	78,200
August	432	266	2,742,081	88,453
September	433	163	2,480,790	82,692
October	432	216	1,864,424	60,142
November	432	252	2,407,369	80,244
December	432	262	2,626,074	84,711
Total			30,578,730	
1920				
January	432	285	3,012,373	97,172
February	432	305	2,984,257	102,904
March	433	315	3,375,768	108,895
April	433	278	2,752,670	91,754
May	433	297	2,991,825	96,510
June	433	302	3,046,623	101,553
July	434	291	3,043,918	98,190
August	434	306	3,145,536	101,168
September	434	317	3,124,308	104,173
October	435	290	3,288,341	106,075
November	435	255	2,935,081	97,836
December	435	202	2,700,268	87,105
Total			36,400,968	
1921				
January	436	184	2,414,753	77,895
February	436	155	1,927,088	68,906
March	436	103	1,593,542	51,447
April	436	96	1,190,751	39,691
May	436	90	1,215,272	39,202
June	436	74	1,064,007	35,466
July	435	69	864,642	27,892
August	435	69	954,901	30,802
September	435	84	985,795	32,857
October	435	95	1,234,450	39,821
November	429	120	1,414,958	47,165
December	429	123	1,642,775	52,992
Total			16,506,564	
1922				
January	430	127	1,545,804	53,090
February	429	139	1,630,180	58,220
March	429	155	2,034,784	65,638
April	429	161	2,070,238	69,008

Ingots and Castings

By American Iron and Steel Institute

	Ingots	Castings	Total
1910	25,154,087	940,832	26,094,919
1911	23,029,479	646,627	23,676,106
1912	30,284,682	966,621	31,251,303
1913	30,280,130	1,020,744	31,300,874
1914	22,819,784	693,246	23,513,030
1915	31,284,212	866,824	32,151,036
1916	41,401,917	1,371,763	42,773,680
1917	43,619,200	1,441,407	45,060,607
1918	43,051,022	1,411,410	44,462,432
1919	33,694,795	976,437	34,671,232
1920	40,881,392	1,251,542	42,132,934

Monthly Ingot Output

Gross Tons

1921	84.2 per cent of capacity	Indicated total
January	2,203,186	2,620,000
February	1,749,477	2,080,000
March	1,570,978	1,860,000
April	1,213,958	1,440,000
May	1,265,850	1,500,000
June	1,003,406	1,190,000
July	803,376	955,000
August	1,138,071	1,350,000
September	1,174,740	1,400,000
October	1,616,810	1,900,000
November	1,666,001	1,970,000
December	1,427,093	1,680,000
Total	16,826,946	19,945,000
1922		
January	1,593,482	1,890,000
February	1,745,022	2,075,000
March	2,370,751	2,820,000
April	2,439,246	2,900,000

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	$13.00 to 14.00
Boston (dealers)	9.50 to 10.00
Buffalo	16.50 to 16.75
Chicago	14.50 to 15.00
Cincinnati	13.50 to 14.00
Cleveland	15.25 to 15.50
Detroit (dealers)	12.75 to 13.25
Eastern Pennsylvania	15.00 to 16.00
New York (dealers)	9.75 to 10.75
Pittsburgh	17.00 to 17.50
San Francisco	10.00
St. Louis	13.50 to 14.00
Valleys	17.50 to 17.75
No. 1 railroad steel New York (dealers)	11.50 to 12.00

BUNDLED SHEETS

Buffalo	$11.00 to 11.50
Cleveland (hydraulic)	12.75 to 13.25
Cincinnati	7.50 to 8.00
Eastern Pennsylvania	13.50 to 14.00
Pittsburgh	14.50 to 15.00
St. Louis	6.50 to 7.00
Valleys (hydraulic)	15.00 to 15.50

STEEL RAILS, SHORT

Birmingham	$13.00 to 14.00
Boston (dealers)	10.00 to 11.00
Chicago	15.50 to 16.00
Cincinnati	15.00 to 15.50
Cleveland	13.75 to 14.25
St. Louis	15.50 to 16.00

STOVE PLATE

Birmingham	$14.00 to 15.00
Boston (consumers)	13.00 to 13.50
Buffalo	15.00 to 15.50
Chicago	15.75 to 16.25
Cincinnati (net)	11.50 to 12.00
Cleveland	14.00 to 14.50
Detroit	11.00 to 11.50
Eastern Pennsylvania	15.00
New York	10.00 to 10.50
Pittsburgh	15.00 to 15.50
St. Louis	14.50 to 15.00

LOW PHOSPHORUS

Buffalo	$18.00 to 18.50
Cincinnati	18.00 to 18.50
Eastern Pennsylvania	18.00 to 20.00
Pitts. billet and bloom crops	20.00 to 21.00

SHOVELING STEEL

Chicago	$14.00 to 14.50
Pittsburgh	14.50 to 15.00
St. Louis	12.50 to 13.00

KNUCKLES, COUPLERS & SPRINGS

Chicago	$15.50 to 16.00
Eastern Pennsylvania	18.00 to 19.00
Pittsburgh	17.50 to 18.00
St. Louis	17.50 to 18.00

COMPRESSED SHEETS

Buffalo	$14.25 to 14.75
Chicago	11.00 to 11.50
Pittsburgh	15.25 to 15.75

FROGS, SWITCHES, GUARDS

Chicago	$14.50 to 15.00
Eastern Pennsylvania	15.00 to 16.00
St. Louis	14.00 to 14.50

BOILER PLATE, CUT

Detroit (dealers)	$8.00
St. Louis (dealers)	10.00 to 10.50

ANGLE BARS—STEEL

Chicago	$15.00 to 15.50
St. Louis	15.00 to 15.50

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	$11.00 to 12.00
Boston (dealers)	11.00 to 12.00
Buffalo	15.00 to 16.00
Chicago, No. 1	13.75 to 14.25
Chicago, No. 2	14.25 to 14.75
Cincinnati, No. 1	13.00 to 13.50
Cleveland, No. 1	12.00 to 12.25
Eastern Pennsylvania, No. 1	17.00 to 17.50
Pittsburgh, No. 1	15.00 to 15.50
Pittsburgh, No. 2	17.00 to 17.50
New York, No. 1 (dealers)	12.50 to 13.00
St. Louis, No. 1	14.50 to 15.00
St. Louis, No. 2	14.00 to 14.50

WROUGHT PIPE

Boston (dealers)	$8.75 to 9.25
Buffalo	12.00 to 12.50
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	9.50 to 10.00

YARD WROUGHT

Boston	$9.00 to 10.00
Eastern Pennsylvania, No. 1	15.00 to 16.00

CITY WROUGHT

New York, long	$10.75 to 11.25

BUSHELING

Buffalo, No. 1	$14.00 to 14.50
Chicago, No. 1	12.75 to 13.25
Chicago, No. 2	8.00 to 8.50
Cincinnati, No. 1	11.00 to 11.50
Cleveland, No. 1	11.00 to 11.25
Cleveland, No. 2	9.00 to 9.50
Eastern Pennsylvania, No. 1	14.50 to 15.00
Pittsburgh, No. 1	13.50 to 14.00
St. Louis, No. 1	12.00 to 12.50

MACHINE SHOP TURNINGS

Birmingham	$6.00 to 6.50
Boston (dealers)	8.00 to 8.50
Buffalo	10.50 to 11.50
Chicago	7.50 to 8.00
Cincinnati (net)	7.00 to 7.50
Cleveland	11.50 to 11.75
Detroit (dealers)	8.00 to 8.50
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.50 to 10.00
Pittsburgh	13.25 to 13.75
St. Louis	8.50 to 9.00
Valleys	12.00 to 12.50

CAST IRON BORINGS

Birmingham (chemical)	$13.40 to 14.00
Birmingham, borings (plain)	6.00 to 7.00
Boston (chemical)	9.50 to 10.00
Boston (dealers)	7.50 to 8.00
Buffalo	11.50 to 12.00
Chicago	11.25 to 11.75
Cincinnati (net)	8.00 to 8.50
Cleveland	12.50 to 13.00
Detroit (dealers)	8.50 to 9.00
Eastern Pennsylvania	13.50 to 14.00
Eastern Pennsylvania (chemical)	16.00 to 17.00
Pittsburgh	14.00 to 14.50
New York (dealers' price)	9.50 to 10.00
St. Louis	9.50 to 10.00
Valleys	14.25 to 14.75

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Boston (dealers)	7.50 to 8.00
Cleveland	12.50 to 12.75
Eastern Pennsylvania	13.50 to 14.00
New York (dealers)	9.50 to 10.00

IRON AXLES

Birmingham	$14.00 to 15.00
Boston	$20.00 to 21.00
Buffalo	23.00
Chicago	24.50 to 25.00
Cincinnati	19.50 to 20.00
Detroit	19.00
Eastern Pennsylvania	28.00 to 30.00
New York (dealers)	20.00 to 21.50
Pittsburgh	24.00 to 25.00
St. Louis	25.00 to 25.50

IRON RAILS

Buffalo	$16.00 to 17.00
Chicago	17.50 to 18.00
Cincinnati	13.50 to 14.00
Cleveland	14.00 to 14.50
St. Louis	16.00 to 16.50

PIPES AND FLUES

Chicago	$10.00 to 10.50
Cincinnati	7.00 to 7.50
Cleveland	11.00 to 11.50
Detroit	7.00
St. Louis	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	$14.00 to 14.50
Chicago	14.00 to 14.50
Cleveland	14.00 to 14.50
Detroit	8.00 to 9.00
Eastern Pennsylvania	14.50 to 15.00
New York (dealers)	10.00 to 10.50
St. Louis	14.00 to 14.50

FORGE FLASHINGS

Boston (dealers)	$7.50 to 7.75
Chicago, small	9.75 to 10.25
Cleveland, small	11.25 to 11.75
Cleveland, large	11.25 to 11.75
Detroit (dealers)	9.50 to 10.00

FORGE SCRAP

Boston	$4.50 to 5.00
Chicago	14.25 to 14.75
Eastern Pennsylvania, No. 1	13.00 to 13.50

ARCH BARS AND TRANSOMS

Chicago	$19.00 to 19.50
St. Louis	20.50 to 21.00

ANGLE BARS—IRON

Chicago	$18.00 to 18.50
St. Louis	18.00 to 18.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	$7.50 to 8.00
Buffalo	13.50 to 14.00
Chicago	11.50 to 12.00
Cleveland	12.25 to 12.75
Detroit	10.00 to 10.50
Eastern Pennsylvania	13.00 to 14.00
Pittsburgh	15.00 to 15.50
St. Louis	11.00 to 11.50

STEEL CAR AXLES

Birmingham	$14.00 to 15.00
Boston (dealers)	14.00 to 14.50
Buffalo	18.00 to 19.00
Chicago	16.75 to 17.25
Cleveland	17.00 to 17.25
Eastern Pennsylvania	17.00 to 18.00
New York (dealers)	12.00 to 12.50
Pittsburgh	16.00 to 16.50
St. Louis	18.50 to 19.00

SHAFTING

Boston (dealers)	$13.50 to 14.00
Chicago	18.50 to 19.00
Eastern Pennsylvania	19.50 to 20.00
New York (dealers)	13.50 to 14.00
St. Louis	16.50 to 17.00

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	$12.00 to 13.00
Birmingham, tram car	13.00 to 13.50
Boston (consumers)	18.00 to 18.50
Buffalo, iron	17.50 to 18.00
Chicago, iron	18.25 to 18.75
Cincinnati	14.50 to 15.00
Cleveland, iron	13.00 to 13.50
Detroit	13.50
Eastern Pennsylvania, iron	17.00 to 18.00
New York, iron (dealers)	14.00 to 15.00
Pittsburgh, iron	16.50 to 17.00
Pittsburgh, steel	17.50 to 18.00
St. Louis, iron	18.50 to 19.00

NO. 1 CAST SCRAP

Birmingham, cupola	$14.00 to 15.00
Boston (consumers)	18.50 to 19.00
Buffalo	18.00 to 18.50
Chicago, cupola	17.25 to 17.75
Cincinnati, No. 1, machinery, cupola (net)	15.50 to 16.00
Cleveland, cupola	17.00 to 17.50
Eastern Pennsylvania, cupola	18.00 to 19.00
New York, cupola (dealers)	14.00 to 14.50
Pittsburgh, cupola	18.50 to 19.00
San Francisco	23.00 to 24.00
St. Louis, agricultural	18.00 to 18.50
St. Louis, railroad	17.75 to 18.25
Valleys	18.00 to 18.50
Detroit, machinery (net)	14.50 to 15.00

HEAVY CAST

Boston (consumers)	$17.00 to 18.00
Buffalo	16.00 to 16.50
Cleveland	14.50 to 14.75
Eastern Pennsylvania	17.50 to 18.00
New York (dealers)	13.00 to 13.50
Pittsburgh	17.75 to 18.25
Detroit, automobile (net)	18.00 to 18.50

MALLEABLE

Boston (railroad)	$14.00 to 15.00
Buffalo	17.00 to 17.50
Chicago, railroad	16.50 to 17.00
Chicago, agricultural	16.50 to 17.00
Cincinnati, agricultural	12.00 to 12.50
Cincinnati, railroad	12.00 to 12.50
Cleveland, agricultural	12.50 to 13.00
Cleveland, railroad	15.25 to 15.50
Detroit	13.00
Eastern Pennsylvania, railroad	13.00 to 14.00
Pittsburgh, railroad	16.00 to 16.50
Pittsburgh, agricultural	13.00 to 13.50
St. Louis, agricultural	14.00 to 14.50
St. Louis, railroad	14.25 to 14.75

Miscellaneous Scrap

REROLLING RAILS

5 feet and over

Birmingham	$15.00 to 16.00
Boston (dealers)	11.50 to 12.00
Chicago	15.50 to 16.00
Cleveland	16.00 to 16.50
Detroit (dealers)	10.00 to 10.50
Eastern Pennsylvania	17.00 to 17.50
New York (dealers)	13.50 to 14.50
Pittsburgh district	17.50 to 18.00
St. Louis	15.00 to 15.50

LOCOMOTIVE TIRES

Chicago	$12.75 to 13.25
St. Louis	13.00 to 13.50

LOW PHOSPHORUS PUNCHINGS

Chicago	$15.00 to 15.50
Eastern Pennsylvania	19.00 to 21.00
Pittsburgh	17.50 to 18.00

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European Iron and Steel Statistics

Gross Tons

Pig Iron Production

	United Kingdom	France	Belgium	Luxemburg
Monthly average 1912..	729,000	405,000	192,000	184,800
Monthly average 1913..	855,000	427,000	203,800	209,000
Monthly average 1919..	617,000	198,000	26,600	50,000
Monthly average 1920..	667,300	281,700	92,700	58,000
1921				
January	642,100	288,000	110,600	93,500
February	463,600	287,400	103,700	81,700
March	386,000	295,300	104,700	27,600
April	60,300	287,700	94,700	70,800
May	13,600	278,100	74,600	78,700
June	800	280,900	67,400	81,700
July	10,200	262,400	44,600	70,000
August	94,200	250,800	43,800	72,800
September	158,300	239,800	9,800	86,200
October	235,500	251,800	45,800	98,800
November	271,800	290,000	59,800	92,400
December	275,000	296,300	73,000	100,800
Total for 1921	2,611,400	3,308,500	862,500	955,000
1922				
January	288,000	307,000	92,700	99,900
February	300,100	318,000	90,300	95,200
March	389,800	370,000	.....	130,900

Ingots and Castings Production

	United Kingdom	France	Belgium	Luxemburg
Monthly average 1912..	566,000	363,000	206,000	79,400
Monthly average 1913..	639,000	385,000	202,300	109,000
Monthly average 1919..	658,000	179,000	27,400	32,000
Monthly average 1920..	754,700	250,200	101,300	49,000
1921				
January	493,400	263,700	119,100	70,800
February	483,500	259,600	98,400	62,000
March	359,100	246,900	96,300	19,700
April	70,600	252,600	108,700	57,100
May	5,700	240,400	62,800	56,100
June	2,700	240,800	54,200	61,000
July	117,200	219,500	26,900	57,100
August	434,100	228,600	27,800	55,100
September	429,300	232,100	34,000	76,200
October	405,400	255,900	41,900	81,800
November	443,800	272,700	46,200	69,900
December	381,000	297,600	63,200	80,700
Total for 1921	3,625,800	3,010,400	779,500	747,500
1922				
January	327,500	309,000	78,400	75,600
February	418,800	311,800	82,700	75,100
March	549,400	.....	.....	99,200

Imports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	166,400	16,400	87,000	27,300
Average monthly 1913..	185,900	12,900	68,900	25,000
Average monthly 1919..	42,400	113,100	44,400	.....
Average monthly 1920..	92,400	89,000	67,000	26,200
1921				
January	157,800	44,200		
February	153,400	35,400	126,100	125,000*
March	156,100	33,900		
April	102,100	26,100		
May	81,900	31,700	95,500	36,000
June	84,500	20,700		42,100
July	103,600	30,300		45,100
August	141,500	16,100	126,600	61,200
September	206,100	27,900		79,800
October	172,800	19,800		96,600
November	169,200	20,700	168,000	54,300
December	117,000	.....		56,300
Total for 1921	1,646,000	.....	514,200	596,400*
1922				
January	88,700	.....	.....	68,200
February	64,600	.....	.....	66,900
March	63,800	.....	.....	105,800

Exports

	United Kingdom	France	Belgium	Germany
Average monthly 1912..	400,600	41,500	124,500	482,400
Average monthly 1913..	414,100	48,200	128,800	516,900
Average monthly 1919..	186,100	19,400	14,500	.....
Average monthly 1920..	271,100	74,600	74,300	143,600
1921				
January	232,400	89,300		
February	166,900	125,800	294,000	503,600*
March	148,900	122,700		
April	160,100	117,400		.....
May	99,000	96,900	241,300	127,800
June	64,700	109,100		159,700
July	64,000	87,600		175,000
August	76,500	122,500	192,300	236,300
September	133,300	171,200		221,800
October	155,800	188,300		242,300
November	193,500	167,400	176,000	230,600
December	205,300	.....		212,900
Total for 1921	1,700,400	903,600	.....	2,110,000*
1922				
January	253,300	.....	.....	218,200
February	223,400	.....	.....	170,000
March	295,800	.....	.....	208,100

*Provisional estimate owing to absence of German figures for first four months of 1921.

Export and import figures do not include scrap.

American Iron and Steel Exports and Imports

Gross Tons

	Imports	Exports
1922		
March	8,612	206,474
February	10,216	133,333
January	10,511	155,822
1921		
December	9,400	134,348
November	9,296	125,492
October	10,609	106,466
September	11,743	94,650
August	8,069	75,641
July	10,040	85,529
June	8,260	119,021
May	23,316	142,553
April	4,935	162,793
March	4,505	230,253
February	3,672	394,638
January	15,784	516,447
Total	119,629	2,187,822
1920		
December	15,120	499,780
November	50,995	434,290
October	39,797	451,972
September	31,825	408,605
August	58,335	431,519
July	32,742	419,230
June	40,549	392,780
May	29,125	419,064
April	29,681	395,583
March	38,377	426,448
February	36,491	308,128
January	45,796	333,514
Total	448,833	4,920,913
1919		
December	39,806	254,780
November	42,826	336,994
October	40,698	302,459
September	43,567	363,531
August	28,987	396,743
July	28,258	287,685
June	21,056	561,020
May	17,885	422,282
April	16,560	396,813
March	17,632	367,224
February	12,302	344,180
January	16,913	371,579
Total	327,490	4,405,281
1918		
December	28,996	356,641
November	11,582	471,427
October	15,744	426,767
September	8,440	473,688
August	12,520	512,104
July	11,511	452,759
June	13,913	418,605
May	14,387	488,515
April	14,371	462,887
March	14,345	379,924
February	12,941	438,848
January	12,475	490,259
Total	168,225	5,372,424
1917		
December	14,642	653,344
November	13,995	473,549
October	14,319	571,868
September	19,058	499,067
August	26,129	503,075
July	28,859	346,393
June	29,080	629,305
May	26,479	582,303
April	48,213	519,397
March	37,943	606,359
February	24,947	449,099
January	40,910	608,281
Total	324,565	6,442,240
1916	310,891	5,947,646
1915	282,396	3,532,564
1914	289,775	1,549,554
1913	317,260	2,745,635
1912	225,072	2,947,596
1911	262,457	2,187,725
1910	516,730	1,537,943
1909	363,984	1,243,583
1908	205,845	964,242
1907	662,358	1,301,981
1906	577,809	1,325,740
1905	416,000	1,010,255
1904	266,398	1,167,674
1903	1,178,797	326,590
1902	1,212,484	411,915
1901	221,297	81,211
1900	209,955	286,687

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Published Week
VOL. LXX. N